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UNITED STATES DEPARTMENT OF AGRICULTURE

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Washington, D. C. ▼ June, 1926

MARKETING BARRELED APPLES

By

GEORGE B. FISKE, Investigator in Marketing, Fruits, and Vegetables
Bureau of Agricultural Economics

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DEVELOPMENT OF THE COMMERCIAL APPLE INDUSTRY

Apples have been grown in the United States for over three centuries, but the business of apple orcharding dates from about 1850 with the beginning of the first great commercial apple section in western New York.

The commercial history of apple orcharding has comprised a succession of booms and depressions each lasting 5 to 20 years. High prices during the Civil War period, and until 1875, stimulated planting in the western New York section and to some extent in eastern New York and New England, and a number of commercial orchards were started at about the same time. Then came depression until about 1885, when higher prices led to rapid growth of orcharding in the Ozarks, Missouri, Illinois, and Michigan, with increases in the southeastern apple region, and the beginning of boxed-apple production with extensive planting in central California. The States from Colorado westward soon came to be known as the boxed-apple region.

Another depression followed, and then came the period of rapid growth in the Northwest and the Rocky Mountain region from 1895 to 1910. It was a time of rapid extension in the Atlantic region also, especially in Virginia and adjacent States. During the 15 years

[1] Acknowledgment of material and aid is made to the Division of Agricultural Cooperation, Bureau of Agricultural Economics.

following 1909, planting in most apple sections was restricted because of the heavy production of apples and the high cost of nursery stock, labor, and materials.

Comparisons based on the census are somewhat uncertain because the figures include apple trees of all descriptions, and do not indicate the extent to which scattered, old, noncommercial plantings have been superseded by the business orchard, but the light planting from 1910 to 1920 is shown by a decrease of one-fourth in bearing trees and of nearly one-half (45 per cent) in trees not of bearing age. The South Atlantic States led in number of young trees. States having over 2,000,000 young trees not yet bearing were New York, Virginia, Pennsylvania, Ohio, and Michigan. Greatest relative decreases were in the far West. In number of bearing trees, however,

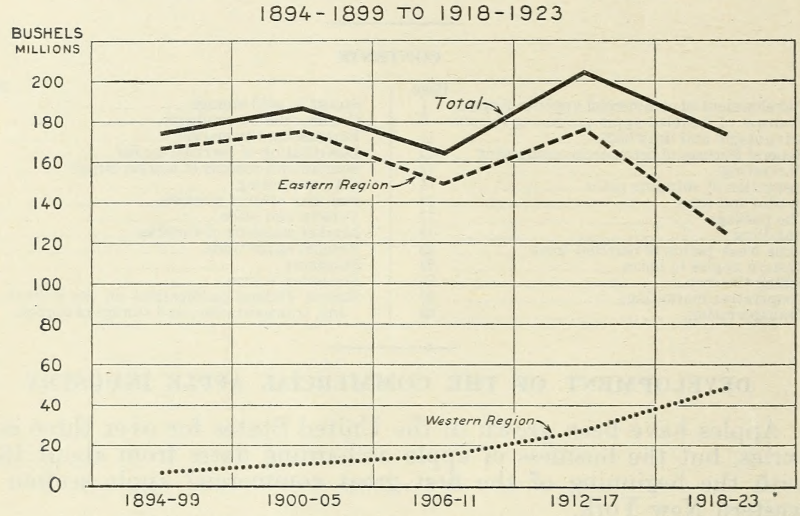

FIG. 1.—Quantity in production of barreled apples has been fairly stable

the Pacific Coast States had doubled in 10 years and the Rocky Mountain States had increased by one-half, while other regions, except the South Atlantic States, had decreased. The figures support the conclusion that the recent rapid gain in production in the far West has been mainly from plantings made some time ago, and that the region showing most rapid extension of late years is that of the Potomac, Shenandoah, and Cumberland Valleys.

The forecast naturally suggested by the census figures is one of coming decrease in commercial production, when the trees in bearing have passed their years of greatest productiveness. Apparently the new plantings are not making up in actual number for the loss of old trees, although doubtless an increasing percentage of the new trees are in commercial orchards.

PRODUCTION

Changes in apple production have tended toward quality and specialization rather than toward mere quantity. The present large

total production exceeding 200,000,000 bushels in favorable seasons was fully equaled in exceptional years as far back as 1895 and 1896. The crop of 1921 was the lightest since 1890. Average production for the 10 years (1905 to 1914) was less than the 10-year average, 1895 to 1904. Comparing production by groups of six years each (fig. 1, and Table 3 at the end of this bulletin) no sustained increase is shown during the last 25 or 30 years. The rapid gains in the boxed-apple region hardly offset the decreasing tendency in the East.

A great change in character and marketability of the crop is suggested by the rapid and almost continuous increase in car lots shipped, which nearly doubled from the crop movement season of 1918 to that of 1923. (Table 6.)

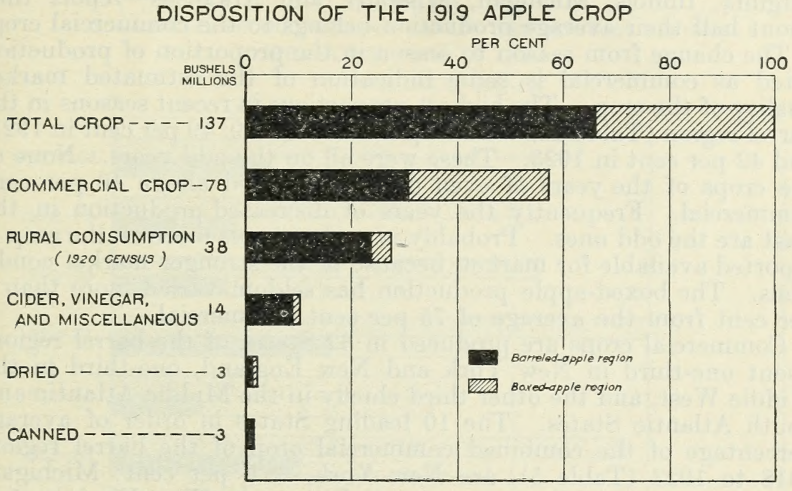

FIG. 2.—Nearly two-fifths of the apple crop is used on the farms or in manufacture

CONSUMPTION

According to figures available for the census year and definitely applying only to the crop of 1919 (fig. 2), about 28 per cent of the total apple production of that season was kept on the farm; 57 per cent was commercial crop and was presumably sold mostly as fresh fruit; 10 per cent was used for cider, vinegar, and miscellaneous apple products; and a little over 2 per cent was used for drying and nearly as much for canning. Comparing the boxed and barreled crops of that season, over three-fourths of the boxed crop was estimated sold as fresh fruit compared with less than half of the barreled crop. Only 12 per cent was kept on the farm in the boxed region compared with 36 per cent in the barreled region. Cider and vinegar required 4 per cent of the boxed crop and 13 per cent of the barreled.

THE COMMERCIAL OR MARKET CROP

Commercial orchards have been supplanting the small home orchards and the proportion of first-class market fruit has increased along with better cultivation, fertilizing, spraying, pruning, thinning, sorting, and grading as practiced in business orchards. By 1916 the commercial crop was reported separately.

The commercial or market crop is mainly the production from commercial orchards as distinguished from the small home orchards. It is the part of production available for market to be sold as fresh fruit, and forms about one-half of the average total crop of the United States. (Tables 4 and 5.)

The relation of the commercial crop to total production varies between the different producing sections and from season to season. The production of the whole barrel region averages 41 per cent commercial compared with 75 per cent for the box region and 50 per cent for both combined as shown in Table 4. Delaware and Maryland are close to great markets and have much early fruit. Delaware reports 81 per cent commercial and New Jersey 71. Most of the representative barreled-apple States—New York, Virginia, West Virginia, Illinois, Michigan, Missouri, and Arkansas—report that about half their average production belongs to the commercial crop.

The change from season to season in the proportion of production rated as commercial is some indication of the estimated market quality of the crop. The highest proportions in recent seasons in the barrel region (Table 11) were 46 per cent in 1919, 49 per cent in 1921, and 42 per cent in 1923. These were all on the odd years. None of the crops of the years of even date were rated above 40 per cent commercial. Frequently the years of decreased production in the East are the odd ones. Probably in such seasons more of the crop is reported available for market, because of the stronger market conditions. The boxed-apple production has seldom varied more than 5 per cent from the average of 75 per cent commercial.

Commercial crops are produced in 32 States of the barrel region; about one-third in New York and New England, one-third in the Middle West, and the other third chiefly in the Middle Atlantic and South Atlantic States. The 10 leading States in order of average percentage of the combined commercial crop of the barrel region, 1918 to 1923 (Table 5), are New York, 28.3 per cent; Michigan, 10.5; Virginia, 8.7; Pennsylvania, 6; Illinois, 6; West Virginia, 5.4; Missouri, 4.7; Ohio, 4.5; Arkansas, 3.2; and New Jersey, 2.9 per cent. These States produce four-fifths of the average annual commercial crop of the barrel region or about 14,000,000 out of 17,000,000 barrels. Crop conditions in these 10 States are a fairly good index of the eastern apple outlook just as the State of Washington is frequently considered the key to the western boxed-apple situation.

Estimated commercial crops for the entire United States ranged from 22,000,000 to 27,000,000 barrels from 1916 to 1919, averaging about 25,000,000. The average increased 20 per cent for the five years 1920 to 1924; the average commercial crop of the boxed-apple region gained 43 per cent while the barreled-apple region increased 8 per cent.

SHIPMENTS

In the western boxed-apple region the estimated commercial crop corresponds somewhat closely to the actual shipments but only about three-fifths of the estimated eastern commercial crop is shipped in car lots. (See Table 10 and fig 3). The proportion ran as low as 44 per cent in 1918–19, when car shortage and the scarcity of sugar interfered with marketing. In the short crop season of 1921 over three-fourths of the eastern commercial crop was shipped. In other recent seasons the percentage was 50 to 60. Of the combined box

and barrel commercial crops three-fourths are shipped as car lots. New York, Arkansas, and Virginia shipped three-fourths of their six-year average commercial crops 1918–1923; Illinois, Delaware, Maryland, West Virginia, and Maine about two-thirds; Michigan, Missouri, and Georgia not far from one-half. Most of the Southern States ship only small percentages, likewise Iowa, Indiana, Ohio, Oklahoma, and Massachusetts. Apples not shipped in car lots are assumed to have been sold in small lots or used locally in miscellaneous ways.

Apple shipments increased from less than 70,000 cars in 1918–19 to 138,000 in 1923–24, with average of 102,000 cars, of which 46,000 were from boxed-apple States and 57,000 from the barreled-apple

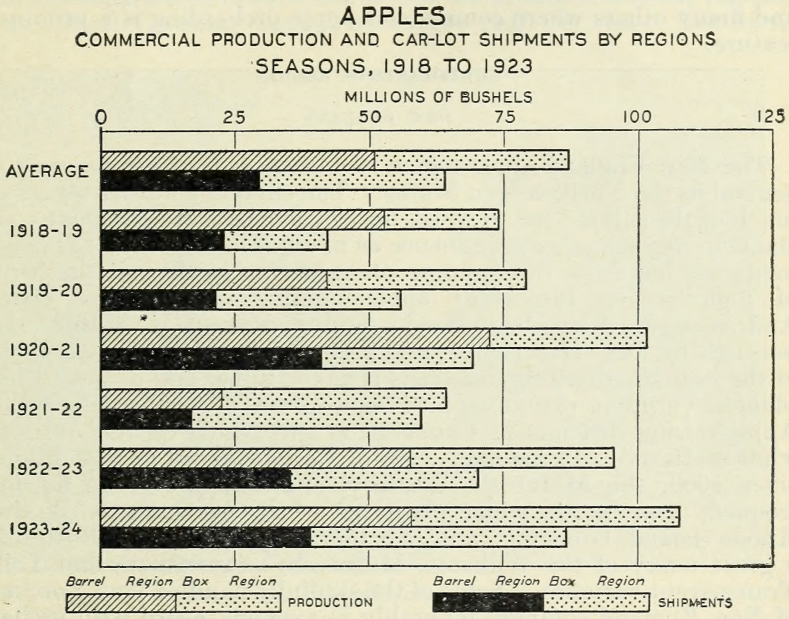

FIG. 3.—The proportion of the commercial crop shipped is less in the barreled-apple region than in the Northwest. A large part of the barreled crop moves in trucks and in less than car lots or is consumed locally

region. The first five States in average volume of shipments from the barrel region were New York, Virginia, Michigan, Illinois, and West Virginia, ranging from nearly 23,000 cars down to 3,500, which together are responsible for three-fourths of the carloads from the barrel regions and about two-fifths of all car-lot apple shipments combined, or 34 per cent of the total bushels, both boxed and barreled-shipped in car lots. Three States follow with about 2,000 cars each—Arkansas, Pennsylvania, and Missouri. Two States, Maine and Maryland, exceeded 1,000 cars. Four States range below 1,000 cars per year but above 500 cars—Delaware, Kansas, Ohio, and New Jersey. The ratings of the States as shipping sections differ considerably from their order in commercial production, chiefly because of the good home markets near some producing districts. Tables 6 and 7 include more precise and detailed statements of State and regional shipments.

FEATURES OF BARRELED-APPLE PRODUCING REGIONS[2]

The term "barreled-apple region" is commonly applied to the whole region east of Colorado, even though in sections of considerable extent more of the crop is put up in baskets, boxes, or hampers, or shipped in bulk, than is sold in barrels. On account of the variety of packs actually employed in the various districts, the two apple regions are sometimes called "eastern" and "western" instead of "barrel" and "box," respectively, but the terms last mentioned are standard in commercial usage.

In a very general way the principle apple regions where the barrel is the prevailing marketing package are the Northeast, the South, and the Middle West. This territory includes six important sections and many others where commercial apple orcharding is a prominent feature.

NORTHEASTERN REGION

NEW ENGLAND

The New England apple region has features that are more or less general in the Northeastern States. The climate is rather severe and much of the soil is hard to work, but the markets are excellent. The Baldwin has the same prominence as in adjacent regions. Yields are moderate but from the younger orchards the quality of the fruit is of high grade. Important apple-shipping counties are Oxford, Androscoggin, Kennebec, Waldo, and Penobscot in Maine; Hillsborough in New Hampshire; and Franklin in Massachusetts. One of the best Northern Spy districts is at the upper end of Lake Champlain in Vermont, extending into two counties of northern New York. Apple-raising districts in Connecticut and Rhode Island are somewhat scattered. In the many new orchards planted in New England since 1900, the McIntosh, Wealthy, and Oldenburg are far more frequent than in the older plantings which were mostly Baldwin, Rhode Island Greening, and Northern Spy. Around Boston are a great many of the Williams, McIntosh, Gravenstein, and Yellow Transparent varieties. Some of the skillfully handled young orchards of New England compare favorably in average return with orchards anywhere in the East.

HUDSON VALLEY

The center of apple production in eastern New York is the Hudson Valley. There is a large proportion of fall varieties, including Wealthy, Oldenburg, McIntosh, and Fall Pippin as well as of standard winter kinds. The soil is generally not so fertile as in the western apple counties and the average yield is less. The leading apple-shipping counties are Columbia, Dutchess, Ulster, and Greene. Important shipping points are Germantown, Coxsackie, Saugerties, Milton, and Red Hook. New York and other large cities are easily accessible by train, river boat, and motor truck. The future of the section is apparently as a source of early, high-grade somewhat perishable fruit, suitable for near-by marketing.

[2] Marketing of apples from the 11 western boxed-apple States is discussed in Department Bulletin No. 1415, "Marketing Western Boxed Apples," by George B. Fiske and Raymond R. Pailthorp.

WESTERN NEW YORK

For the past half century the western New York section has led all others in the barreled output. The great apple counties are Orleans, Niagara, Monroe, and Wayne, also Ontario, Genesee, Yates, Wyoming, Seneca, Cayuga, Onondaga, and Oswego. Most of the leading counties are along the southern shore of Lake Ontario. Important shipping points are Hilton, Lockport, Albion, Barker, Medina, Williamson, Holley, Burt, Brockport, Lyndonville, and Middleport.

The Baldwin is the leading variety, and for nearly half a century the apple markets of the country fluctuated season by season mainly according to the quantity and quality of the New York Baldwin which has constituted usually about half the production of the region. Rhode Island Greening makes up nearly half the rest. Northern

FIG. 4.—Picking apples in western New York

Spy ranks next, followed by Tompkins King, Oldenburg, Wealthy, McIntosh, Roxbury Russet, Hubbardston, Twenty Ounce, and various less important varieties. Most of these kinds bear more heavily as a rule in the alternate years.

New York's commercial production sometimes reaches 6,000,000 barrels, two-thirds of it in western New York. Many of the old orchards have passed their prime and recent new planting is of moderate extent. Apparently the region is losing some of its prominence, compared with more rapidly increasing regions of the South and the Northwest. The principal markets are the great cities of the Northeast, but distribution extends west and south when crops are light in other apple regions.

Figure 4 shows picking of apples in a typical large commercial orchard of this section.

PENNSYLVANIA

In the census year of 1919, Pennsylvania was the eighth State in total apple production, fourth in number of bearing trees, and second

in number of farm orchards. Car-lot shipments numbered about 2,000 cars in 1922–23, and 4,000 in 1923–24. From 20 to 40 per cent of the commercial crop is usually shipped in car lots. Local markets are important. The four southern apple counties are a part of the great Potomac-Shenandoah-Cumberland apple region with large commercial orchards in which York Imperial leads easily and Stayman Winesap, Ben Davis, and Winesap are prominent varieties. The apple sections of northern, western, and eastern Pennsylvania comprise mostly small to medium-size farm plantings in which the Baldwin and Northern Spy are the most popular varieties, and the crop is sold chiefly in the numerous local manufacturing centers.

NEW JERSEY AND DELAWARE

Intermediate between the North and South, New Jersey and Delaware produce the varieties of both sections, including Winesap and Ben Davis, as well as Oldenburg, Wealthy, and Williams. The commercial production in New Jersey is about equal to that of eastern New York and is increasing in the southwestern counties of Burlington, Camden, Gloucester, and Cumberland. Delaware produces less than half as many apples as New Jersey, chiefly in Kent and Sussex Counties. There are some large commercial orchards. Both States ship heavily to New York, Philadelphia, and Boston, mostly in baskets and hampers. These apples are an important feature of the early fall market in the great eastern cities. In addition to early apples many of the shipping stations load a large tonnage of late apples packed in barrels. Storage of apples wrapped in oiled paper was reported favorably in this section in 1924. Several thousand bushels were stored by one cooperative association and fruit taken out late in the season was found to be in excellent condition.

MARYLAND

Most of the apples grown in Maryland are packed and shipped in barrels or baskets. During the summer months the principal varieties are Early Harvest, Yellow Transparent, and Rambo; in the fall, York Imperial, Grimes Golden, Stark, Winesap, Stayman Winesap, Jonathan, and Baldwin. Increased attention has been given to the packing of apples in Maryland in the past few years, and better grading has become more prevalent. Some very fine stock is grown in the northern part of the State, also on the Eastern Shore in Wicomico and Worcester Counties. The principal cold-storage warehouses are in Baltimore. A few small plants are located in various parts of the State, particularly at Edgemont, Cumberland, and Havre de Grace. Considerable stock from the western section of the State is hauled to Baltimore by motor truck direct to the commission houses in the produce section, or to the cold-storage warehouses.

SOUTHEASTERN

The southeastern region includes the Potomac, Shenandoah, and Cumberland Valley sections of Virginia, West Virginia, southern Pennsylvania, and Maryland, and the Piedmont section of Virginia and outlying hilly sections in North Carolina and Georgia. There are many large young commercial orchards. The combined volume of shipment from this section is sometimes equal to that of New York

State, while Virginia exceeds Michigan as a source of car-lot movement. About 20 cities receive half the car-lot output. In general, the cities of the Northeast and South constitute the main market territory. Several hundred carloads are shipped for canning and cider manufacture. Export shipments are prominent in September and October.

THE VALLEY REGION

Production of the Shenandoah, Cumberland, and Potomac Valley sections in Virginia, West Virginia, Maryland, and Pennsylvania averages about one-half as much as that of western New York. The districts around Martinsburg, W. Va., and Winchester and Staunton, Va., are prominent. Other heavy shipping centers are Biglersville, Pa., and Hancock, Md. The counties of Berkeley, W. Va.; Frederick and Augusta, Va.; Adams and Franklin, Pa.; and Washington County, Md., are centers of production. This apple region often produces as large a yield per acre as western New York, and is adapted to choice varieties like Winesap, Grimes Golden, and Yellow Newtown, and to several productive, annual bearing kinds including York Imperial, Stayman Winesap, Rome Beauty, and Ben Davis. A list of commercial holdings published by the Virginia State Department of Agriculture in 1922 indicated that about two-fifths of the holdings in the State were York Imperial, one-fifth Winesap, one-fifth Ben Davis and Yellow Newtown, and the remaining one-fifth Stayman Winesap, Grimes Golden, and miscellaneous varieties. The stronghold of the York Imperial and Ben Davis is the valley region. Frederick, Augusta, and Shenandoah Counties in Virginia had over half of the Ben Davis, and Frederick County one-fourth of the Stayman Winesap.

The crop is ready in time for the early domestic and export trade and, with the aid of large local cold-storage plants, continues on sale throughout the season. The region is subject to late frosts and some troublesome orchard pests and diseases, but has been generally prosperous and is one of the few large eastern regions that are increasing commercial apple acreage greatly in recent years. Virginia had about 3,000,000 young trees and 7,000,000 of bearing age in the census year 1919.

THE PIEDMONT REGION

The Piedmont region extends along the eastern mountain ranges of Virginia down into North Carolina, with apple-shipping centers at Crozet, Afton, Arrington, Roanoke, and Stuart, Va., and in Surry County, N. C. Yellow Newtown (Albemarle Pippin) long famous in the export trade is at home in the Piedmont region, but Winesap is the leading variety and York Imperial, Stayman Winesap, and Arkansas (Mammoth Black Twig) are important. The average production is about one-third that of the Potomac, Cumberland, and Shenandoah Valley region. The soil is rather less easily tilled and less fertile than in the valley region.

OTHER REGIONS

There are commercial apple districts in southwestern Virginia; in Haywood, Polk, and Henderson Counties, N. C., and in Rabun and Habersham Counties in northeastern Georgia. Habersham

County sends out fairly large shipments of apples, packed western-box style, including Yates, Gravenstein, Grimes Golden, Winter Banana, Bonum, Delicious, and Winesap. The earliness of this region and its easy access to southern and eastern city markets are points in its favor.

MIDWESTERN

MICHIGAN

Three-fourths of the commercial crop of Michigan is grown in the western part. Leading counties are Van Buren, Oceana, Berrien, Allegan, Mason, and Grand Traverse. The prevailing sandy clay soil and the moist lake shore climate offer favorable conditions which resemble those of western New York rather than the Central West. Leading commercial varieties are like those of New York with the addition of Ben Davis, Maiden Blush, Fameuse, and Jonathan.

Shipments become active in August with the marketing of Oldenburg, followed by Wealthy, Maiden Blush, Alexander, Wolf River, and then the Baldwin, Northern Spy, and other standard late kinds. The height of the season's movement is reached during October; shipments decrease to a few hundred cars in November and are still less in subsequent months until the new season opens. The principal markets are those of the Central West.

OHIO

Southern Ohio has conditions somewhat like the Piedmont region of Virginia and has about the same annual output. It is the only eastern region where Rome Beauty is the leading commercial variety, but York Imperial, Ben Davis, Grimes Golden, and other kinds are also grown. Markets are chiefly the large cities of the State. Washington, Gallia, and Columbiana are leading apple-shipping counties. In northern Ohio are smaller districts with conditions and varieties much like those of western New York and Michigan.

ILLINOIS

The most important apple State of the Central West is Illinois. The southern early apple district, mainly Union and Johnson Counties, often leads other apple sections in number of shipments during the first part of the season. Yellow Transparent, Benoni, and Oldenburg are the most popular varieties. The district is rather hilly and many orchards are in sod. From the Mississippi Valley section of the State, including Calhoun, Adams, and Pike Counties, Ben Davis, Jonathan, and various standard midwestern kinds are shipped heavily to St. Louis and other markets of the Mississippi Valley. Marion County ships the Ben Davis and some early apples.

MISSOURI AND ARKANSAS

Apple production in the Ozark region of Arkansas and Missouri is chiefly in Benton and Washington Counties, northwestern Arkansas, and in Lawrence, Greene, Webster, Newton, McDonald, and Barry Counties, Mo. This is a leading region of the Ben Davis, Gano, and Arkansas (Mammoth Black Twig), although there is a tendency toward Jonathan, Winesap, Stayman Winesap, and Grimes Golden

because of the prevalence of blister canker in the Ben Davis group in the Middle West. Jonathan had become the leading kind in Missouri in 1923, with Ben Davis and Gano next.

In years of full yield, the Ozark region is important, producing about 5 per cent of the country's commercial crop. Numerous seasons of damage by spring frost and by disease have made the production very irregular, resulting in discouragement and neglect, but there are many good commercial orchards. The cities of the Middle West afford active markets. The barrel is the usual package, but fully half the shipments are in bulk. In Buchanan County, of northwestern Missouri, is another district that ships mostly Ben Davis, Gano, Arkansas, and Missouri Pippin.

WISCONSIN AND MINNESOTA

Wisconsin and Minnesota are not classed as leading apple regions, but commercial orchards are numerous in Door and Bayfield Counties, Wis., and in Houston and Hennepin Counties, Minn. Leading varieties are Oldenburg, Wealthy, Northwestern Greening, Fameuse, and McIntosh.

KANSAS, IOWA, AND NEBRASKA

The region along the Arkansas River in Kansas is intermediate in character. It produces the usual midwestern varieties, but uses the box package rather than the barrel, and practices irrigation. The commercial production is about 1,000 carloads and tends to increase. Another district of about equal importance in Doniphan County has some well-managed, productive orchards. Adjoining this section on the north are Nemaha and Richardson Counties in Nebraska and several counties of Iowa, all heavy shippers of the Ben Davis and similar varieties, in barrel and bulk, and of Jonathan and Winesap.

ADVANTAGES AND DRAWBACKS

The successful apple regions did not develop by chance. Apple trees were set in many places but not all sections proved able to increase and to survive the general competition, although handicaps of one kind or another were sometimes offset, for a time at least, by special advantages or improved methods.

The barrel region feels northwestern competition all the more because of generally greater liability to frost damage and less intensive methods of production and marketing, but the East has comparatively near-by markets and cold-storage plants, more abundant labor supply, and somewhat less trouble from the codling moth.

Most of the well-known apple regions have natural frost protection, because of nearness to large bodies of water or because of the general elevation of the orchard sites. Absence of such conditions means more uncertain and irregular crops. Usually the soil of the best regions is fertile, well drained, and adapted to orchard machinery. The increasing dependence on power machinery handicaps the rough-land orchardist more and more. Lack of good soil means lower yield or higher cost. Suitable orchard areas in a commercial region must be of sufficient size to permit fairly large-scale operations and concentration of the industry around convenient shipping points. Most regions have found leading varieties that are especially well

suited to local conditions. Distance to market is a handicap to be successfully offset only by excellence in other ways. Attractiveness as a place of residence has contributed to the growth of some orchard sections. Prevailing intelligence and community spirit of growers has sometimes led to high development of whatever advantages existed.

No region has all conditions favorable and most of them have serious drawbacks. The Middle West has had some success without much natural frost protection because of fertile, easily worked soil, productive varieties, and good local markets. Parts of New England, eastern New York, and southern Ohio have rather inferior or rough land and severe, irregular climate, but possess the best of local markets. The Piedmont section of the South has much poor, hilly soil and is not very accessible to the great markets but has favorable climate and ample labor supply. The Potomac-Shenandoah-Cumberland region has only a fair degree of natural frost protection and accessibility, but possesses good soil and a climate adapted to production of choice varieties, and has large areas suitable for extensive orchard enterprises.

Northern apple regions are handicapped by a shorter growing season, winterkill, spring frost, late freezing, windstorms, and high cost of labor. Southern regions suffer from spring frost, hail injury, bitter rot, rust, field mice, and poor roads. The Middle West has much frost injury and blister scab.

GENERAL FEATURES OF COMMERCIAL ORCHARDING

The prevailing features of successful orcharding common to the prominent apple regions may be summed up briefly as follows:

1. Fairly level, fertile, loamy, well-drained soil.
2. Frost-protected, convenient location in a successful apple district.
3. Orchards of 10 acres or more and product handled as a specialty.
4. Trees 35 feet apart, more or less, according to soil, climate, and variety.
5. Well-known, locally tested, commercial varieties.
6. Cultivation with intercrops and in later years with annual cover crops.
7. Fertilizing according to needs of soil.
8. Thorough, timely spraying.
9. First-class equipment.
10. Judicious selection of orchard machinery.
11. More or less thinning of the fruit.
12. An efficient selling policy based on best available information, careful harvesting and handling.
13. A reputation established by a well-graded, attractive, reliable pack.
14. Good packages.
15. Experienced orchard help.
16. Painstaking personal supervision of operations.

HARVESTING

SEASONS IN THE BARREL REGION

The apple harvest extends from June to November. Varieties are commonly classed according to the principal market season. Early varieties are gathered mostly in July and August, fall kinds in August and September, and winter apples, which constitute two-thirds of the commercial crop, in September and October. Picking time for the same variety varies about two weeks between Virginia

or Arkansas compared with New York or Michigan, and the time varies from a few days to a week, from year to year, according to weather conditions. Grimes Golden and Jonathan are harvested mostly in the first two or three weeks of September; York Imperial and Yellow Newtown most actively the last two weeks of that month. The principal Baldwin season is the last three weeks of October in the Northeast, and the same season includes the other important winter varieties of that region, although Northern Spy, Rhode Island Greening, and Northwestern Greening begin a little earlier and Ben Davis and the Russets a little later than the Baldwin. In the Middle West most of the Ben Davis and Gano are picked during the last week of September, the first and sometimes the second week of October, the season beginning September 25 in Arkansas and ending October 20 in Illinois. In the Potomac Valley region the Ben Davis is harvested the first three weeks of October and in the Northeastern States during the last three weeks of the month. Winesap is gathered mostly the first three weeks of October. Stayman Winesap is ready a few days earlier than Winesap; Arkansas and Willowtwig end the harvest season in the Middle West, and are picked from October 15 to November 5.

PICKING

Too early picking is at the expense of size and color. Picking too late impairs shipping and keeping quality and increases risk of loss by blowing off or freezing. At the picking stage the apple shows bright, attractive color, separates easily from the twig, and the seeds are ripening as shown by their darker color. Growers begin a little ahead of maturity and rush the work in order to average about right and avoid danger of an early freeze. When apples begin to fall off easily the tree should be picked. Pickers use stepladders and pointed ladders for moderate heights. Wide-based ladders narrowing toward the top are preferred for higher trees, and sometimes extension ladders are used for the very high work. Canvas picking sacks hung from the shoulders are in rather general use, although the half-bushel baskets hooked to the ladder or to branches are in favor in some districts.

Experienced orchardists supervise the picking closely because of the temporary helpers employed, who are likely to bruise the apples or damage the trees. Time required varies greatly according to age of trees, size and set of the crop, nature of the land, and whether the work is day or piece work. Probably 10 to 25 barrels a day is a fair general estimate for experienced men in the eastern apple region. As few as 5 barrels may be a day's work among aged trees with a light crop, but 40 barrels a day may be picked in a well-laden young orchard, where much of the crop can be gathered without ladders.

The better orchardists require the fruit to be emptied carefully into boxes, crates, or barrels, under the trees. (Fig. 5.) Sometimes the pickers reject the culls when picking and emptying the fruit, thus obtaining an "orchard run" product without further sorting. More commonly the sorting and grading is done over a portable table or in the packing house. Fruit softens and sunburns if left long exposed after picking. It should be moved along promptly until shipped or stored.

INSPECTION AT SHIPPING POINT

Inspection service at shipping points is available on request in some parts of the apple region. The work is done usually under cooperative arrangements between Federal and State authorities. In Virginia the inspection facilities are used not only by the large shippers, but by miscellaneous growers organized into county rings for the purpose of providing for inspection and advertising. The average cost by this plan in Virginia in 1924 was about 4 cents a barrel, which paid expenses of inspection and of printing in trade papers the complete list of growers whose apples were being inspected. A small circular giving the same information and guaranteeing the dependability of these apples was also prepared and mailed to 6,000 dealers in cities of 5,000 population and over in all States east of the Mississippi

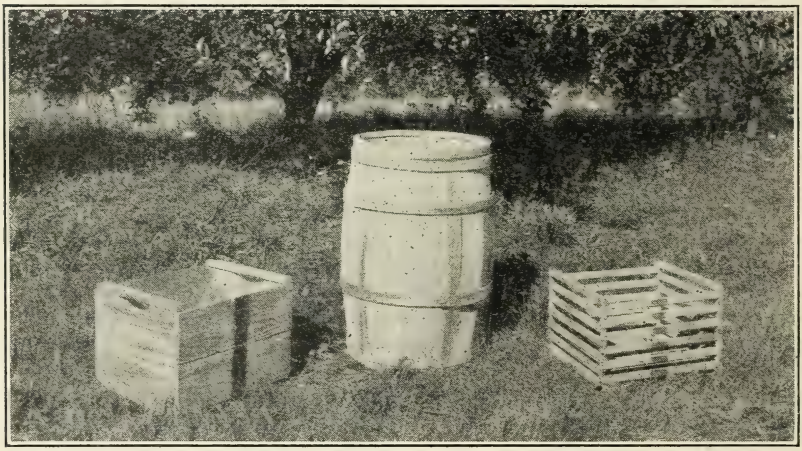

FIG. 5.—Boxes, barrels, or crates are used in the orchard

River. Eight thousand circular letters were sent out giving information about the progress of the State inspection service and standardized packing. In addition to this method of advertising, posters, stickers, and a cookbook were printed and distributed.

GRADES AND SIZES

Apples in standard packages are commonly sold under descriptive terms indicating variety and comparative general market qualifications as expressed in grade and size. Many of the States as well as the United States Department of Agriculture have outlined definite specifications which will be considered briefly in the section following.

Much of the eastern market crop is put up under such terms as "A–2½ inches minimum," applying to the medium to large No. 1 fruit, or the "B–2¼ inches minimum," or No. 2, comprising marketable stock too small or too poor for the better grades. The letter of such terms refers to grade—that is, to color, shape, and freedom from blemishes. The figures specify the smallest size permitted in the barrel. To allow for variations incident to proper grading and

handling, a tolerance is usually provided for apples which are below the prescribed size. Recommended Federal grades and some of the State grades designate leading grades by numbers, as No. 1 or No. 2. The orchard-run grade or class is common in New York and New England. It is usually applied to the picked apples of general market size and quality, the rotten, bruised, misshapen, badly worm-infested, very small, and rough apples having been thrown out. This simple grading seems practicable for the Baldwin crop in normal years, but not so well adapted to smaller and less uniform market varieties or to apple crops of variable quality and condition.

There is a wide variation in uniformity of size and color in barreled apples. Apples 2½ inches in diameter are rather small and the pack, A–2½ inches minimum, may include any fruit from rather small size to very large apples 3 to 4 inches in diameter, the color and finish showing an equally wide range. Apples legally branded "A–2½" may vary widely in value and price, aside from general quality and condition, which alone include plenty of variation.

The increasing number of large orchards and associations and the use of sizing machines has favored more accurate and uniform grading and sizing. In handling large quantities the tendency is to make at least two additional classes, marketing the largest and best colored fruit as a Fancy pack, or A–2¾ inches; next a medium size as A–2½, and the apples of small size but otherwise desirable pack as A–2¼. The smooth, unblemished, highly colored small apples when separated bring good prices, especially for export. A comparatively few large growers size the A or No. 1 apples from 2¼ inches upward in four or five sizes varying one-quarter inch, but as yet only a small part of the market supply is graded so exactly. Most A grade apples below 2½-inch size are packed with the B grade.

The proportion of first-grade apples in the fruit as brought from the tree varies from one-half to three-fourths. In seasons when the crop is of good quality about three-fourths of the picked apples go into the A grade barrels in such sections as Virginia and western New York.

REQUIREMENTS BY STATES [3]

The following States have recognized the United States grades as official standards: Illinois, New Jersey, New York, North Carolina, Ohio, Pennsylvania, and South Carolina. The United States grades are used by shipping-point inspection service also, although not officially adopted, in Delaware, Kansas, Maryland, Tennessee, West Virginia, Virginia, and Wisconsin. Figure 6 shows inspection at shipping point while car is being loaded.

Over a dozen of the States in the barreled-apple region, including several which have recognized the United States grades, have adopted State grades. Accordingly, the large markets offer barreled stock packed according to the requirements of the State, and stock packed according to laws of the respective States shipping to that market, also apples packed according to the United States standard grades.

As the degree of enforcement differs considerably, there is a considerable variation in stock put up under many of the State brands. Some States permit private brands, under such terms as Superior, and Selected. With the adoption of the United States

[3] This discussion refers to harvest season of 1924.

recommended grades by an increasing number of States, the confusion tends to grow less.

The leading market grade for barreled apples is the next below Fancy. This leader is termed A grade in the State laws of Connecticut, Delaware, Kentucky, Massachusetts, Michigan, New Hampshire, New York, Vermont, and Wisconsin. The leading grade is termed No. 1 in Illinois, Maine, and West Virginia, and in the recommended United States grades.

The established grade is usually independent of size, but Maine specifies 2¼ inches diameter as minimum size, and Michigan and Oklahoma 2½ inches for the larger varieties and 2¼ for others. The minimum size of the fruit, however, must be indicated on the package according to requirements of nearly all States.

FIG. 6.—Inspection at shipping point is often done while cars are being loaded

Specifications for A or No. 1 grades require generally that the pack shall be of one variety, well grown, mature, sound, hand picked, properly packed, normal shape, and free or practically free from dirt, insects, and fungous injury, bruises, and other defects, except those necessarily caused by grading and packing. Variations from the standard are allowed to range 5 to 10 per cent by weight in most States.

The Fancy grades provided by State laws differ from the leading grade in requiring higher color, greater freedom from defects, less tolerance for variation, more careful packing, and more uniform size. A few specify minimum size, which is usually 2¾ inches diameter for most varieties and 3 inches for the largest varieties. Others do not mention size except that it be indicated on the package.

Grades next below the leading grades, A or No. 1, are usually termed either B or No. 2. There is a Commercial grade in Illinois

similar to the usual B grade. These second grades are more tolerant regarding color, shape, defects, and injuries. Some specify 2¼ inches as minimum diameter.

Apples not reaching the requirements of the leading grades are usually packed as No. 3, but as C grade in New York State. Apples not packed according to any of these grades usually come under the term "unclassified and ungraded" and may include anything except culls.

Orchard-run is a combination of all grades, usually but not always excluding culls. This class is much used for early apples, for the apple supply of local markets, and for shipment in open packages and in sales to local dealers for repacking or for storage.

The size of the barrel is usually specified in State laws as the same capacity as the United States standard barrel of 7,056 cubic inches. Connecticut and Maine specify 7,000 cubic inches, but obviously these are legal only in markets within these States.

The color requirements are a prominent feature of most State standards for the higher grades. Red kinds are usually divided into solid red, partial red, and red-cheeked or red-blushed varieties, with varying proportions of red required in varieties belonging to the respective classes.

In the specifications of Delaware, New York, West Virginia, and those States adopting the United States recommended grades, a definite percentage of the red coloring normal for the variety is required for the higher grades. A tinge of color usually is definitely required for the red-cheeked or blushed varieties. Yellow or green varieties are usually listed as requiring only their characteristic color. Many States specify required color of the leading grade as fair, medium, or good for variety.

The grades recommended by the United States Department of Agriculture are more specific and clearly defined than the majority of the State grades. Specifications for recommended U. S. No. 1 grade include causes of damage, such as dirt, spray burn, foreign material, skin puncture, sun scald, visible watercore, insects, hail, diseases, and injuries from mechanical or other means. The toleration is 10 per cent by weight. A definite percentage of color is specified as a minimum for leading red and part-red varieties.

The U. S. No. 2 grade differs from the No. 1 in specifying "serious damage" instead of "damage" from the various causes, and it specifies fewer causes and makes no color requirements.

U. S. No. 3 comprises marketable apples below No. 2.

U. S. Fancy grade requires freedom from the various defects. The apples must be well formed and the color requirements are much higher than those for No. 1.

THE PACKAGE

The legal barrel holds 7,056 cubic inches, 105 quarts, or 3.281 bushels. It has been popularly considered that a barrel is equivalent to 3 bushels, but in fact a standard barrel contains 605 cubic inches more than 3 bushels. The empty apple barrel weighs about 10 pounds, a well-packed standard barrel weighs around 170 pounds, although railroads usually accept it for billing purposes at 160 pounds.

Small fruit weighs more than large sizes. Some varieties weigh more than others.

A standard barrel usually contains from 300 to 500 apples. A barrel of A–2½ and up of leading eastern market varieties, usually runs from 350 to 400 apples to the barrel. Use of secondhand flour barrels is a doubtful economy since they are above legal size, are seldom clean, and are not easily headed up. Old barrels make a poor appearance in the market and such packs often sell at a discount.

Baskets or any shipping containers, equipped with lid or cover, holding 2,150.42 cubic inches when level full, are recognized as a standard bushel by the United States Department of Agriculture. Many States have weight laws in conflict with those of other States and with the Federal law. The weights are based upon heaped measure, and the statutes prohibit the sale of standard baskets as bushel containers unless they contain the legal weight. This results in some relabeling of the weight or measure.

Apples put up in sacks are a feature in some midwestern markets. The fruit is low grade and is sold to peddlers on the 100-pound basis at the car door. Apples do not keep well in sacks but are more easily handled than bulk shipments, and the cost of package and transportation is low.

The tendency in packages is to use the barrel for long-haul railroad shipment and for cold storage. The basket, hamper, and crate are favored for early apples and windfalls for short-haul shipment and are used extensively for summer shipments from extreme southern producing sections. Recent changes in various State grading laws tend to raise the standard of the basket pack and to extend its general use.

Many early apples come packed in bushel hampers, the standard dimensions being 15⅛ inches top diameter by 9 inches bottom diameter by 19 inches slant depth. Hampers of the removable bottom type may be faced and packed with the top on, like a barrel. The basket as compared with the hamper will endure rougher usage and has more top surface for display of the fruit. The 6-basket carrier, with six 4-quart baskets, is another general package used more or less for early apples, as are 4-basket carriers and various small hampers and baskets, but the miscellaneous containers are losing ground to the bushel basket because of its convenience, ease of packing, handling and loading, and its cheapness and general availability. A five-eighths-bushel basket is prominent in the Philadelphia market.

The square box with slatted top is popular in some sections for trucking, orchard handling, and to some extent for storage. The standard western apple box is used in the East to a very limited extent for accurately graded fancy dessert fruit. A few growers use small paperboard boxes for choice fruit to supply a retail trade by parcel post.

HANDLING

The tendency is away from the hand-sorting tables (fig. 7) and toward the use of sizing machinery and other packing-house equipment (fig. 8) owned by growers, dealers, or associations.

Considerable packing of apples is still done in the orchards or in farm buildings. Some growers pack in the orchards as fast as picked, using sorting tables, heading up the packed barrels or baskets, and

trucking them to the local shipping point or to storage. Other growers haul their apples to cover and set the orchard force at packing as soon as the work of picking has been completed. They may

FIG. 7.—Experienced help is needed around the sorting table

use hand-sorting tables only, or they may have sizers, operated usually by a small motor, or they may use a combination of tables and sizers. A great deal of orchard-run fruit is put up in the orchard in barrels, baskets, or market boxes. First and second grades may

FIG. 8.—Using sizing machinery in one of the largest and best-equipped southern packing houses

also be put up with simple portable equipment, but grading is likely to be less carefully done than in packing houses. Little packing is done by dealers on the farms in most sections.

Although many growers are provided with power sizing machines, the tendency is to take the crop from the orchard to the dealer's or association's packing plant. Among the causes of this trend is the lack of sufficient skilled help on the farms, the increasing demand for a uniform standardized pack, and the need of full equipment for rapid, close grading into the several sizes often desired. The use of the more fully equipped packing houses is general for the largest orchard enterprises, especially in the Potomac-Shenandoah-Cumberland Valley and in western New York, but less so in the Middle West, in eastern New York, and in New England. Many cooperative enterprises carry on a packing-house system. The plan favors the use of good equipment and promotes thorough, efficient grading and packing.

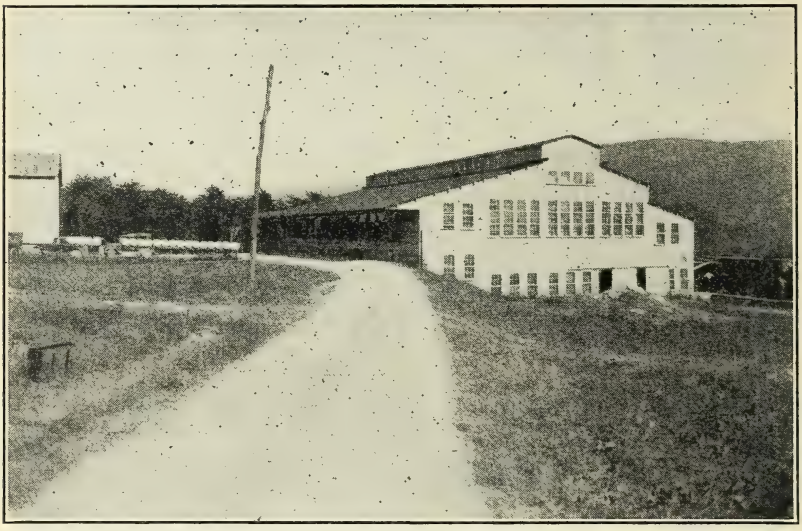

FIG. 9.—This large Maryland packing plant is exceptionally well lighted

THE PACKING-HOUSE SYSTEM

As it handles large quantities by uniform methods, the packing-house system promotes better packing. The larger houses are equipped at least with sorting tables and sizing machines with a conveyor belt and sizing rings, or corrugated rollers, which drop out the fruit according to size. Figure 9 shows an exceptionally well-planned and well-equipped packing house in the southeastern region.

The fruit from the orchard is unloaded on the receiving floor close to a roller conveyor leading to the feeding belt of a sizing machine. As the fruit moves along, sorters pick out the culls and the No. 2's, placing them in baskets. The No. 1 stock passes on and is sized by the machine, usually into two sizes, but sometimes into a number of additional sizes. The export trade provides a welcome outlet for the small sizes. Many packers put up a 2-inch size for this purpose, besides the regular 2¼ and 2½ inch and larger sizes. Some growers also sort the No. 2 or B grade into various sizes, passing it through the machine separately, or they use a double

carrier belt, sizing both grades at the same time. Elaborate sizing by machine is hardly practicable except where fairly large quantities of high-class apples of single varieties are available. As a considerable part of the eastern crop is produced in small, more or less scattered blocks, by unorganized owners, and of numerous varieties, including much low-grade but marketable fruit, the conditions are somewhat less favorable to fully equipped centralized sizing and grading than in the Northwest. Sizing pays best with choice, highly colored fruit. Lack of definite sizing is no doubt one of the great market drawbacks of barreled fruit. Purchase of unsized fruit in barrels is more or less guesswork even though it is put up according to recognized grades.

FIG. 10.—Barrels are usually ring faced at the bottom, stem ends down, and are inverted before opening

ORCHARD PACKING

Equipment for the orchard pack may be simple. With orchard-run grade, sometimes nothing is used but the packages, which are filled as fast as the pickers bring the fruit. When more definite grading is required, a sorting table moved from place to place is the most common orchard equipment. The fruit is graded by hand as it passes over the inclined surface of the table. Workers remove the second grade and culls, placing the second grade in baskets for the packers while the first grade passes toward the end of the table and is packed into baskets or barrels.

The orchard pack is fairly good when uniform grading and sizing is not expected and when the work is well supervised.

BARRELING

In packing the barrel it is usually ring faced at the bottom, beginning at the edge and placing the fruit in circles stem ends down as shown in Figure 10. The next layer is sometimes placed on edge, red side down to show between the spaces of the first layer. The barrel is then filled carefully, racked down meanwhile from two to six times, and sometimes a heavy "follower" is used to aid the racking and evening processes. When leveling the top, some packers ring tail the last layer, sides up. (Fig. 11.) Then the head is pressed in and reinforced at the edge with light strips or binders. The hoops are tightened and nailed in position. Apples for export are pressed down extra tight and the heads fastened in very securely. Sometimes the barrels are strengthened with extra hoops of metal.

In large-scale packing the work is divided, one crew facing the barrels, one filling, and another heading and branding. Frequent shaking down and tight pressing are insisted upon. The most satisfactory packing houses are conveniently located and well lighted, with plenty of room for working and for temporary storage, and with equipment for grading, sizing, packing, and transporting the fruit, as complete as the quantity to be handled makes advisable. With increasing dependence on cold storage, packing houses with facilities for long storage appear to be considered not so essential.

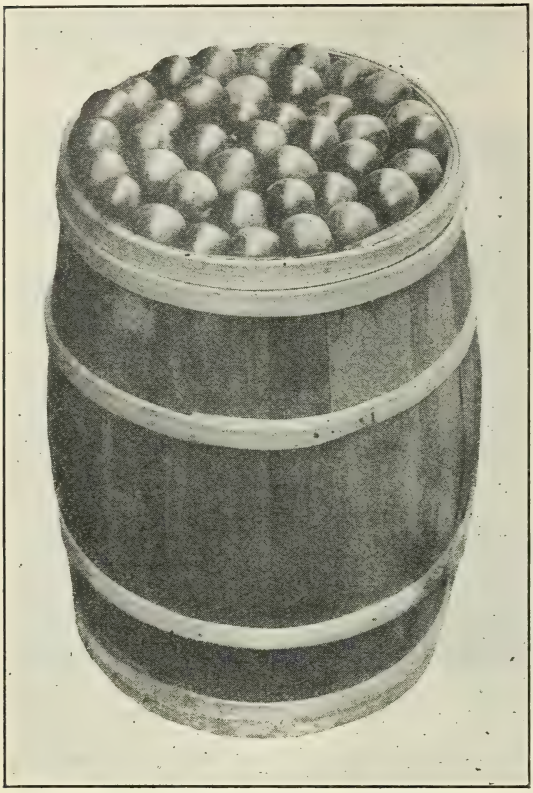

FIG. 11.—Sometimes the top of the barrel is packed ring tail before heading

BASKET PACKING

The round bushel basket is gaining in favor because of convenience in packing and handling. When the work is done in the orchard, the fruit is often packed or poured directly into the baskets, the culls being sorted out meanwhile. Then it is shaken down and a follower is used; then it is ring faced, apples stem end up, with about 2 inches bulge at the center. It is topped with a corrugated pad and a cover marked with grower's name and address, the name of the variety, the grade, and the size. The packing-house practice varies mainly in the facilities for more uniform and accurate sizing and grading when required.

THE EARLY PACK

Early apples, especially when not packed in barrels, are more or less of a special class. Reports from large markets indicate that three-fourths of the early eastern crop is marketed in baskets or in packages other than barrels. It is partly the poor, irregular grading of the early crop that has given the basket pack its uncertain reputation. An informal survey of the Chicago market in 1923 indicates that about nine-tenths of the early apples in baskets would grade below A or No. 1. Many States exempt the basket, open box, and hamper from grading regulations, thus diverting much ungraded fruit to such packages.

Early apples are mostly picked when well colored and beginning to drop. Distant shippers must necessarily pick them before they are quite ripe, and it is a common practice in a few localities to thin the crop three weeks or a month before ripe and to place these late thinnings on the market. Usually an orchard of early varieties is gone over at least twice during the regular harvest season because of uneven ripening. The sorting and packing are often done in the orchard. Grading is much neglected, but according to the best practice the fruit is run through a sorting and sizing process; the packages are uniformly packed and the top of each is ring faced. A few packers ring pack the entire basket.

Many early apples are packed in market boxes of various sizes. Those used in southern Illinois hold two-thirds of a bushel, and those in the East about a bushel. The boxes may be filled from the side. Others have slat covers, and can be filled from the top. Peck baskets, hampers of various sizes, the 6-basket and 4-basket crates are used in the South.

WINDFALLS

The windfalls and drops are often of little importance since the general prevalence of thorough spraying, but sometimes destructive wind storms or other causes bring a large percentage of the crop to the ground. The fallen fruit is commonly graded like orchard run, the cider apples being thrown out. The windfalls are poor keepers but are fit for use earlier than the picked fruit. Many are shipped in baskets and many in bulk to market or cannery. Where local markets are good the fruit is often taken by peddlers. Windfalls and drops of late varieties, in general sell for one-third to one-half the price of picked orchard run and from two to six times the price of cider apples. Selected windfalls and drops of some of the early varieties are only a little more perishable than the hand picked and may bring close to the same price if sold in near-by markets. Markets for windfalls are chiefly local and vary according to the supply and quality.

Details of harvesting and packing methods are available in Farmers Bulletin 1080, "Preparation of Barreled Apples for Market."

SOME WEAK POINTS OF BARRELED STOCK

Weak points in the preparation of barreled stock for market are reflected later in prices. Defects in handling methods include the following: A failure to grade uniformly for defects and for color; a lack of proper sizing; inadequate packing methods and machinery which result in numerous bruises and skin punctures.

The packs of barreled stock, especially from near-by shipping points, receive criticism in wholesale markets because of their irregularity. The barreled stock is seldom as carefully graded as the western boxed apples and one of the greatest improvements that could be made would be in this direction. The next would be to standardize the grade names. For instance, from different States, during the season, barreled stock of a similar quality may be marketed under A, No. 1, Commercial pack, Fancy, and Private brand. It is difficult for the growers to know when they read market quotations what class of such stock is being quoted.

Barreled apples have such a wide range of condition and quality, even though marked by the same grade term, that an exceedingly

wide price range often prevails. The loose interpretation sometimes given to State grading laws makes the marketing uncertain as a description of the product; that is, the term A–2½ does not have the same definite significance that Extra Fancy 125 has on boxed apples. As an extreme case of wide price range, a market reporter noted on a certain date that Northern Spys were jobbing at $4 to $10 per barrel for stock that was all marked "standard A grade 2½ inches."

The practice commonly known as "plugging" should be discouraged in packing barreled apples. This consists of facing both ends of the barrel with fruit of good quality and size and placing inferior fruit in the center. Buyers are wary of goods packed in this manner and discount them heavily.

Neglect in thinning the crop on the trees is considered responsible for much small, irregular fruit.

Some packers show a disposition to crowd "tolerance" to the limit, putting in as many undersized defective specimens as can be passed under inspection rules. The reputation of a brand is weakened by such a practice.

The fancy barrel packs put up by some dealers and by a few large shippers and shipping associations approach the northwestern boxed stock in uniformity of size, and they tend to move uniformly throughout the season and to sell at steady prices. The irregularly packed stock tends to rise and fall in price more rapidly and it is hardest to move during a period of slow trading. There is, in other words, an uncertainty in demand which is in part the result of the uncertainty in pack.

Many shippers are apparently heedless of the fact that buyers prefer straight cars of one, or at most two or three, desirable varieties all of the same grade and size. Some are careless in the selection of varieties placed in a car. For example, cars from the southeastern apple region might contain Jonathan, Grimes Golden, and Northwestern Greening, which combination of red, yellow, and green dessert and cooking varieties can scarcely be sold to the advantage of the shipper. Sometimes cars contain from 15 to 20 or more varieties, probably two-thirds of which are not well known or are undesirable from a commercial standpoint. It seems to be the occasional practice of some shippers to place just enough desirable varieties in a car to enable them to send it with the feeling that the buyer will take the undesirable fruit in order to get the better apples. It is the opinion of persons well acquainted with the apple situation that whenever this custom is followed the grower or shipper is the loser, inasmuch as the price for the more desirable varieties is lowered invariably, the extent of the reduction depending on the quantity of less desirable stock in the car.

EASTERN APPLES IN BOXES

Apples are put up in western-box style in some of the eastern apple sections, notably Virginia, Maryland, Georgia, western New York, Michigan, Wisconsin, and Massachusetts; but the total quantity of eastern boxed fruit marketed, although tending to increase, is still comparatively small. Car lots are received occasionally in the large city markets.

Prices quoted are mostly below those of corresponding western grades owing to poorer grading and packing and the general lack of

highest color and finish, but a few growers shipping to Boston, New York, Chicago, and other markets have succeeded in obtaining top prices. The McIntosh is one of the varieties which as grown in the best managed orchards, takes on a high finish in the eastern climate and in limited quantity has been marketed successfully in boxes. Many of the leading eastern varieties are not especially suitable for standard boxed apples trade or for one reason or another are not well adapted for the boxed pack, and there is a general scarcity of skilled packers and of equipment necessary for satisfactory handling. The fact that the East has suitable material for barrel shook, while the West has not, is one of the primary reasons for the two types of packages, as is the case with packages for many other agricultural products.

During the 1922 and 1923 seasons considerable boxed Michigan stock, mostly Baldwin, Northern Spy, McIntosh, and Fameuse, packed western style, was placed on the Chicago market. The grading and packing appeared comparable to that of the standard boxed-apple shipping States. A cooperative association in Door County, Wis., shipped McIntosh in boxes in 1923. Eastern markets have received a few carloads of boxed Jonathan, Yellow Newtown, and Winesap from Virginia and Maryland; Gravenstein, Delicious, and Winter Banana from Georgia; and McIntosh and other kinds from New York and New England. Many of the eastern boxed apples are put up according to standard western boxed-apple grades. The western "Combination Fancy and Extra Fancy" is boxed on considerable quantities in the southeastern apple region.

The square, shallow eastern market box holding 1 bushel is used extensively in handling the local stock in Boston and for cold storage of winter fruit from orchards within trucking distance. The fruit is mostly orchard run, culls out, packed loosely, and the contents slightly heaped, and usually protected for storage and handling by nailing cross pieces over the top, sometimes with corrugated paper board under the cross pieces. The fruit brings about the same relative price as barreled stock and the box pack is locally popular with growers because of the ease and convenience in packing, handling, and trucking to market. The boxes are filled directly from the trees, loaded in the orchards, and trucked immediately to market or to the storage plants. The buyers supply the boxes and pay cash on delivery at storage. The chief defect in this box is its flimsy construction which tends to cause it to break or pull apart after repeated handling.

SELLING THE CROP

LOCAL MARKETS

A considerable part of the farm apple crop is sold locally direct to consumers who buy from the farm wagon or come to the farm in automobiles, or it is disposed of to local stores and peddlers. The method involves little actual expense and often the package is returned. Local retailing is especially desirable for low-grade fruit hardly worth shipment and for varieties little known in the general market. An orchardist is often surprised to find that the district within convenient trucking distance becomes an ample wholesale market when carefully developed by telephone, mail, and personal canvass. Retail customers are obtained by canvassing with samples, by setting up roadside stands, or by advertising.

AT FARM OR SHIPPING POINT

Most larger sales by commercial growers fall mainly within four general classes: (1) For cash or on account to local dealers or to agents of distant firms; (2) lump sale on contract; (3) sale through commission dealers, and (4) sale through cooperative associations.

In the great apple-producing sections, like western New York, the Shenandoah Valley, and southern Michigan, apple buying is highly specialized. Many of the local dealers have office, warehouse, and shipping facilities and are on hand to buy throughout the season. Accordingly, a great proportion of the total commercial barrel crop is sold direct to local buyers at principal shipping points; but traveling buyers, also, are very active, especially when the season's crop is of desirable quality and is limited in quantity. Under favorable conditions these agents may place a large proportion of the crop under contract early in the season. They buy from growers and from local dealers.

Buyers ride out into the country and look over the stock owned by growers or being handled by shippers, and make purchases for immediate needs and sometimes buy large blocks for shipment later in the season. Exporters drop in from time to time and buy blocks of stock. A few buyers stay through the entire season, some of them arranging joint account transactions with several shippers. Sometimes, year after year, it is the same buyer who bids highest for the grower's crop, as he has found that his customers ask for these particularly fine, well-packed apples. To maintain this reputation the grower must have taken pains with the crop. The dealer inspects it on the trees or in the packing house or storage, and the deal proceeds with mutual satisfaction. The well-informed grower knows the market situation, for he reads the market reports and talks with dealers.

In orchard sales, as a rule, there is a contract specifying as closely as possible (1) the number of barrels, (2) the pack, (3) conditions of delivery, and (4) the price per barrel. Comparatively few crops are sold on the trees for a lump sum, or per barrel "tree run;" that is, just as they grow. In such sales the buyer picks and packs the fruit.

Most sales are made by the barrel, bushel, or hundred pounds on the basis of fruit delivered at station or storage house either as delivery of sales agreed upon early in the season or as lots to be sold at the current market price.

COMMISSION

In years of heavy production many dealers refuse to buy, but instead urge shipments on commission, thus placing the risk on the shipper. It has been estimated that more than one-half of the sales of western New York apples in New York City are by commission dealers, but in most markets the indicated percentage is much lower. These consignments are from country dealers and from growers. Many orchards are too small or too distant to attract buyers and a vast number of small lots are sent to commission dealers by express or freight. A great deal of commission business is secured through advance payment of one kind or another, dealers making loans or extending credit to assist in harvesting, packing, and storing the crop, and deducting these advances from the proceeds of the sales.

Relations between a skilled, reliable producer and a substantial dealer with a high-class trade are likely to become a source of mutual satisfaction and profit. The market connections are of such importance that they should not begin without knowledge of the dealer's financial and business standing as viewed by bankers and the trade. Dealers, bankers, and leagues of commission merchants, chambers of commerce, or boards of trade are ordinarily well informed on these matters. Reliable, well-established dealers are glad to supply references. Full knowledge of the selected firm is especially necessary when shipping on commission, since the results depend wholly on the business integrity and ability of the concern.

A close inspection of the produce trade gives the impression that honesty is the rule among well-established firms and that the differences in results depend mainly on business ability and salesmanship. It is not enough to satisfy oneself regarding the general reputation and business standing of a firm.

To a grower it may seem that the dealer had only to turn over the produce to waiting buyers and pocket the commission or profit. But competition is keen. Each firm knows that it must give satisfaction in the long run or lose its business. Energy, enterprise, judgment, experience, and personality count for as much as in other lines. One dealer may place a carload quickly at top prices, another may let it drag along. Whether the owner is selling outright or on a commission basis, it is better to deal with a good salesman who has a good class of buyers. Accordingly, the more a grower or shipper can learn about the various receivers' ways of doing business the better his chance of finding the most desirable agency for distribution of his produce.

SALES BY DEALERS

In the fall, when trading is active and shipments are heavy, local firms are receiving telegrams asking for quotations or making offers on barrel, basket, or bulk stock, for immediate shipment or future delivery. Local dealers may keep in touch with many leading markets by telephone. If conditions look favorable and they have orders for a number of cars for prompt shipment, the dealers direct their buyers at country loading points to buy from growers or to have the growers deliver the stock already bought to cars or warehouses. Shippers keep in touch with crop and market reports of the Bureau of Agricultural Economics, United States Department of Agriculture, or call the local office of the bureau to find out destinations of cars and the volume of local shipments and of shipments from competing sections in order to determine what section of the country is buying most actively. Buyers also keep in touch with the market reports in order to be informed of conditions.

Once the stock is packed, sales may be made for prompt shipment or for future delivery. Apples in cold storage often change ownership from grower to shipper or to outside buyer, or from shipper to outside buyer. In this case the buyer may assume the storage charges. If he buys the apples as they are he assumes also the expense of repacking, if necessary, and of loading. Shippers who sell on wire orders usually assume all of these charges and quote a price that covers the additional cost. A considerable part of the crop that is sold on wire orders goes to small towns. When markets

are weak or when a shipper has stock that is overripe or of mixed grades and varieties he often consigns it to one of the large cities where it is sold for his account.

SALES THROUGH BROKERS

When car-lot sales are arranged by local shippers or large growers through city brokers, the seller writes or telegraphs to a broker an offer of a specified variety and grade at a definite price per barrel, for a carload. The broker gets in touch with dealers likely to buy the stock and sends the shipper the best bid obtainable. When city dealer and country shipper have agreed on terms, the broker notifies the shipper to forward the car f. o. b. usual terms, and to send draft on the broker's bank with bill of lading, and with permission to inspect.

The buyer, on accepting the car, orders his bank to pay the draft and the proceeds are forwarded to the shipper. If the car is not accepted outright or if other complications arise, the broker endeavors to settle the dispute.

When official inspection services are available at shipping point the cars are often sold f. o. b. cash track, in which case payment is due at once and shipment is made at buyer's risk. In the case of auction sale, shipping-point basis, the transaction is absolute and payment is due immediately, with no deduction except the auction fee. The auction method is seldom employed in the barreled-apple region.

METHODS OF SALE IN SHIPPING REGIONS

Methods of sale by growers and dealers are all much the same in the leading eastern apple regions, with some allowance for distance from market, the activities of associations, and the relative prominence of different apple varieties. Features of several prominent sections are as follows:

WESTERN NEW YORK

The territory known as the western New York apple region is the result of three-quarters of a century of development, and shows a great deal of variation in details of the marketing system. The growers are acquainted with many ways of disposing of their apples, and change their methods from season to season somewhat according to conditions.

About 75 per cent of the western New York shipped apple crop is usually sold by growers to local dealers or agents who pack or repack much of the fruit and sell it to outside dealers by whom it is distributed to the trade. The other 25 per cent is mostly put up or stored by growers, or sold direct to traveling buyers, or shipped on commission, or handled by cooperative associations.

Probably the local dealers have a stronger hold than in most other important apple regions. They are often general merchants who buy many lines of local produce and sell supplies needed by producers. They are concerns of long standing and have established close business and personal relations with many of the growers. Often they advance money to growers, either as payments on a coming apple crop or in the form of farm supplies. In seasons like 1923–24, apparently most local dealers suffered losses as a result of the long decline of the market after the fruit had left the possession of

growers. In more favorable trading seasons the dealer may obtain a liberal margin for cost of handling and marketing, interest, and risk.

Many of the apples sold to local dealers are brought in slatted boxes or loose in barrels just as picked in the orchard and are unloaded into the dealer's warehouse, where they are run through sizing and sorting machines, and put up in barrels according to grade. A great deal of stock is also put up in barrels on the farm, graded according to legal requirements, then headed, and brought to town for sale to the dealer, or for storage or shipment on commission. Fall varieties are mostly hauled in baskets to the local dealer unless sold through the local cooperative association.

Sales to the dealer, whether a local firm or agent of outside concerns, are usually made according to terms of agreement or contract, by which the buyer takes the whole product of the orchard at an agreed price per barrel or per 100 pounds. Some buyers accept the grower's pack, when known by experience to be reliable. Others are accustomed to repack on taking the barrel from cold storage. A considerable number of local buyers are also dryers and canners. They run the apples through grading machines, barrel or basket the best stock, and use the rest for manufacture. Most of the hand-picked stock left in bulk is sold as orchard run 2½ inches up and is sorted as picked and then hauled to the loading station or to temporary storage.

Culls and windfalls are hauled to local evaporators, canneries, or cider mills, or are loaded in bulk on cars for shipment to mills. For a period of about a month, late in October or early in November, cider apples are important. Sales in blocks of 10 to 100 cars are not uncommon for this grade of fruit in western New York.

SOUTHEASTERN REGION

In the Potomac-Shenandoah-Cumberland Valley region the larger part of the crop is sold by growers for cash on immediate or future delivery, at loading station or cold-storage plant. Usually most of the crop is under contract to buyers before packing begins, especially when there is active demand for the early export trade. The most important contract buyers are representatives of prominent city dealers but numerous local buyers are active. A half-dozen cooperative associations handle varying quantities up to 500 carloads each and together rank next to the cash buyers in importance. Commission sales are handled mostly by a few representatives of city firms acting as marketing agents for growers. Some of the larger growers have established direct relations with firms in distant markets to whom they ship f. o. b. or on commission. In full-crop seasons, early f. o. b. sales are less prominent and more of the fruit is stored by owners or is sold on consignment.

GREAT LAKES REGION

In southwestern Michigan, the apple trade centers around various lake ports, including Benton Harbor and South Haven. Much of the fruit is brought to town in wagonloads by the growers and sold for cash per bushel basket or barrel to local dealers and to agents. Cooperative selling is an important feature. Most of the associations are federated and sell through large country-wide selling

agencies. There is also considerable shipping on consignment by boat to commission firms in Chicago, Milwaukee, and other markets. A number of city dealers have local agents who solicit shipments to be sold on commission or who buy outright when occasion requires. Fruit bought the night before reaches the Chicago market next morning and conditions in that city strongly influence the Michigan country markets. Local dealers and local associations of growers sell much of the stock obtained from growers to city receivers usually in carloads f. o. b., or on a similar basis. Much stock is marketed by motor trucks which travel to Chicago, Grand Rapids, Detroit, and to many less distant points.

Local packing and storage by dealers is less a feature than in some other eastern apple regions and a large proportion of the rather variable growers' pack goes direct to the consuming markets. The associations grade, pack in barrels or baskets, and store many apples and sell them from time to time throughout the season. Usually from 200 to 300 cars of cull apples are shipped in bulk to cider mills. Considerable market stock also is shipped in bulk, orchard run. All sales in bulk are usually on the 100-pound basis. The cannery output is important. In general, there are about the same methods with local and seasonal variations in apple marketing as observed in the western New York region.

EARLY REGIONS

In the early apple sections of southern Illinois, eastern New York, New England, and the Southern States, commission sales are in the majority. The perishable nature of the product compels almost daily shipments, often in less than car lots. Growers sometimes unite to ship in car lots or they ship mixed carloads. Since many of the early orchards are near markets, an increasing proportion of the early crop is trucked to the nearest cities. Crops from some of the larger orchards remote from market are sold on car-lot f. o. b. basis. Cooperative associations handle many early apples in New Jersey, New York, and southern Illinois, but the association usually operates through its brokers or commission dealers.

COOPERATIVE MARKETING

Eastern apple organizations do not handle as large a percentage of the crop as do the boxed-apple cooperatives in the Northwest, but nevertheless they do considerable business. Reports received by the United States Department of Agriculture from 42 cooperative associations and federations that handle barreled apples indicate that in 1922, the last season for which comprehensive returns are available, they shipped 4,798 cars of apples with a shipping-point value of $3,115,068. These cooperative shipments were about 7 per cent of the total shipments from the barreled-apple region in the 1922–23 season.

Nearly all of the associations have been organized since 1912, and half of them since 1917. Nine of them are large federations having together 248 local branches and membership exceeding 24,000. A few leading federations made more than half of the cooperative sales. Usually they have a contract with their members giving the association control of the crop for several years. They sell through a sales

manager or sales agency and pool the returns so that all members receive the same prices for the same grades and varieties, according to average returns for the season. Sales by the associations are made preferably for cash at shipping point, but many carloads are sold subject to acceptance and sometimes at a price including freight and other charges. Many associations ship more or less stock for sale on commission. The services of brokers are employed by some associations to assist in finding buyers but the majority of sales are direct to car-lot dealers.

ORGANIZATION

Two general forms of organization are in use—the capital stock plan and the nonstock plan. Reports from 38 organizations indicate that 17, or 44.7 per cent, are formed as cooperative stock associations, and 55.3 per cent are of the membership type. The most common practice at present in the larger federations in regard to the form of organization used is the nonstock or membership form in the overhead organization. To handle the permanent investments, such as buildings and equipment, one of two methods is used: Either the local associations are formed as stock organizations and the permanent investments are held by them or a subsidiary corporation of the stock type is set up to own the property and handle the operation of the grading and warehousing. The stock in such subsidiary corporations is owned by the grower members of the locals of the federation.

CONTRACTS

The general practice of the cooperative associations that handle barreled apples is to use contracts of some sort. Of 37 organizations, 29 had contracts. In independent unitary associations contracts are made directly between the association and the grower members. In federations the most common practice is to make contracts between the growers and the locals, which in turn contract with the overhead organization for the delivery of the product. Where subsidiary corporations have been set up, cross contracts between the growers and the subsidiary corporation are made to provide for the grading and warehousing of the apples of each member.

STANDARDIZING AND GRADING

Practically all barreled-apple associations make some provision for insuring the shipment of good-quality products. Methods used, however, vary greatly. In some of the organizations grading and packing is done by the growers without machinery. In others, many of the growers have machine sizers and do the grading and packing on the farm, but the difficulty of supervision by the association and the resulting lack of uniformity of such farm-packed apples have induced most organizations to adopt systems of central packing. This is especially true in the larger organizations, as, for example, in the federations, where in most cases each local has a central packing house. Generally the packs of the various locals are kept uniform by inspectors from the central organization.

In grading, most organizations separate varieties and qualities of fruit. In addition, several associations size the fruit closely. Altogether, while much improvement in standardization has been made

by cooperatives in the past few years, a great deal still remains to be done before strictly graded and uniform barreled-apple packs become the rule rather than the exception.

POOLING

Organizations that handle barreled apples usually pool the proceeds of sales in some way. This is indicated by reports from 38 of the 42 associations showing that 31, or 81.57 per cent, were running sales pools of some sort. The most common type of pool used for barreled-apple sales is the variety seasonal plan, in which the sales of any particular variety are pooled for the entire season. In most of the organizations each variety is subdivided for pooling into the standard grades and sizes and in a few of the larger organizations the sales are still further classified for pooling, according to size. In some associations pools are run for shorter periods of time, such as a month, a week, or even one day, but provision is usually made to separate varieties and grades. Thus growers not only are protected against losses sustained by sudden market fluctuations but are paid according to the quality of the apples they offer for sale. This stimulates growers to produce higher grade apples and prevents much dissatisfaction which might otherwise occur.

SELLING AND DISTRIBUTING

Barreled-apple associations differ considerably in their methods of selling and distributing. In regard to the association personnel handling the selling, reports from 21 associations show that in 15 the manager handled the selling; in 4 sales managers were used; and in 2 an official of the association handled the sales. Additional reports from 11 organizations show that 9 of them hired cooperative sales agencies, and 2 employed noncooperative or private sales agencies. The success of the various methods mentioned has depended largely upon the efficiency of the persons in charge, though in general the larger organizations have been able to hire more capable salesmen and consequently have obtained more efficient selling.

The methods of sale used by barreled-apple associations differ little from those used in handling other products, nor do the associations use one method exclusively. Reports from 40 associations show that, in 1922–23, 29 sold some cars cash track; 22 showed many f. o. b. sales; 17 sold some delivered; and 22 consigned part of their shipments. Generally, apple associations sell as much as possible on an f. o. b. basis, but condition of the product, market conditions, and fixed customs of trade do not always permit the entire volume to be sold in this way.

In the markets 12 associations sold through brokers, and the others sold to car-lot receivers or through commission houses or auctions. Through these distributing agencies each of 29 associations reached an average of 55 markets.

To stimulate the sale of their apples, several organizations advertise in magazines and otherwise. Reports from 34 associations show that 17, or 50 per cent, used advertising space in 1922–23. Ten of the 17 spent a total of $1,440, or $144 per association. It is known, however, that some of the larger organizations not reporting spent rather large sums in advertising and promoting their brands of barreled apples.

TRANSPORTATION

Hauling apples when the fruit is loose in boxes and barrels or when packed is preferably done with spring wagons or trucks, usually in wagonloads of 25 to 30 barrels, or truckloads of 50 to 100 barrels (fig. 12) or 100 to 300 boxes or crates.

BARRELS AND BASKETS

When loading the car with packed fruit at the shipping station, the barrels are stowed in the car on their sides with heads toward the sides of the car in alternate rows as in Figure 13. Lengthwise loading is undesirable because of the greater strain on the heads and liability of displacement. Packing on end is suitable only for small

FIG. 12.—Motor trucks carry barreled apples well if properly loaded

lots in single layers. A standard load as designated by some of the railroad companies is 160 barrels loaded three or four layers high. Actual carloads vary from 50 to well over 200 barrels, averaging not far from 175 barrels. The ventilated refrigerator car is preferred for long-distance shipment, but many box cars are used and are fairly satisfactory for moderate distances in mild weather. As icing is needed only in warm weather, it is practiced for only a small proportion of barreled apple shipments.

Baskets are packed four layers high, lids up, and rows offset to bring each basket on the edges of two baskets underneath. A type of basket much in use may be packed together by interlocking the projecting rims of the covers. Shipments average about 500 bushel baskets to a carload. The bushel hamper averages about 600 and the five-eighths bushel hamper 680 to the carload.

BULK

Car-lot shipments in bulk are the rule for cider and canning stock. Good market stock in the East is not usually shipped this way. In the Ben Davis region, particularly Arkansas, Missouri, and Kansas the excellent handling qualities and low market value of the prevailing varieties favor bulk shipment, which comprises half the car-lot movement in some districts. The apples when of good general market grade are sometimes protected from bruising by straw bedding and the firm-fleshed, thick-skinned varieties often reach market in much better condition than might be anticipated by shippers accustomed to handle good apples almost as though they were eggs. Bulk shipments average about 15 tons to the carload. Western bulk

FIG. 13.—Barrels and rows are alternated to insure a tight carload

stock is usually orchard run. Upon arrival at the market center the buyers come to the railroad yards with barrels, boxes, or bags and haul the fruit away. Some low-grade apples appear in midwestern markets put up in sacks, which are more easily handled than bulk shipments.

STOCKS IN COLD STORAGE

Cold storage prolongs the active market season for two or three months and greatly relieves the pressure of supply in the early part of the season. Combined boxed and barreled holdings on December 1, stated in barrels, have ranged from 4,500,000 to 5,500,000 barrels from 1914 to 1917 and from 5,000,000 to 6,750,000 during 1918 to 1922, but reached nearly 10,000,000, or well over one-fourth of the estimated commercial crop in 1923. In 1924, December holdings were only 7,500,000 barrels, but with a lighter crop were in about the same proportion as in 1923. From October to December the storages

are filling, new arrivals greatly exceeding withdrawals. Cold-storage stocks of barreled apples are always at their height in December. Boxed apples, because of distance from the main cold-storage centers, are slower in reaching the season's climax. At least two years in three, the boxed holdings on January 1 are greater than on December 1. The combined and relative movements of cold-storage stock in barrels and boxes are shown in Figure 14.

From 1914 to 1918 barreled apples in cold storage at the height of the season were two-thirds to three-fourths of the combined holdings. A five-season average, 1919–1923, showed about one-half barreled stock.

The average crop of barreled apples for the six years ended 1923 was 59 per cent of the average combined commercial crop, whereas

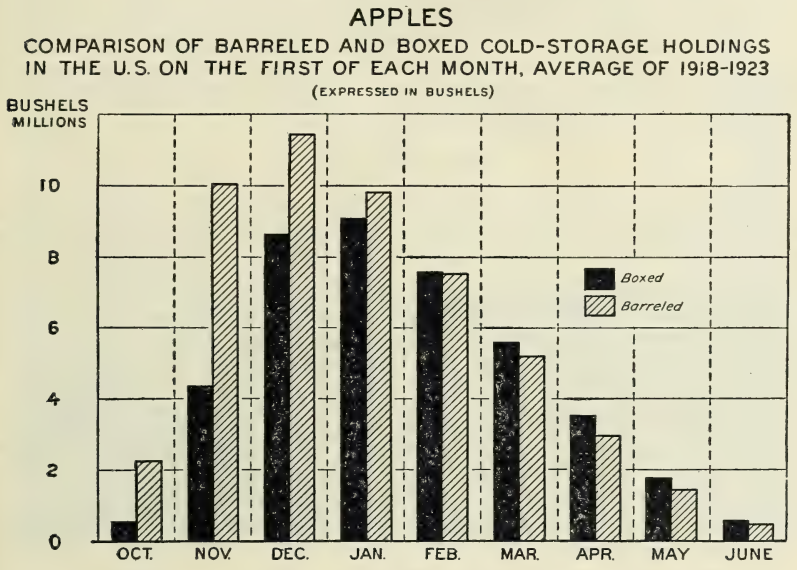

FIG. 14.—Because of proximity of numerous cold-storage plants to eastern producing sections, storage movement of barreled apples is very rapid and reaches greatest volume comparatively early in the season

the average of barreled stock in storage December 1 on these years was a little over 56 per cent, showing that a slightly smaller percentage of the commercial barreled apples than of the boxed apples goes into cold storage. The larger proportion of the eastern commercial crop that is unsuitable for storage, but available for local markets may partly explain the difference.

Basket stock in cold storage is mainly eastern and was reckoned with barrel stock until 1923. On December 1, 1925, basket holdings were over 8 per cent of combined cold-storage stocks.

Cold-storage stock of combined boxed and barreled holdings decreases moderately from December 1 to January 1. The total withdrawals are usually equivalent to 300,000 to 600,000 barrels, averaging about 400,000 from 1918 to 1924. Withdrawals average over 1,000,000 between January 1 and February 1 and the stock is reduced still faster the following month, decreasing from 1, 000,000

to 1,500,000 barrels February 1 to March 1. Withdrawals March 1 to April 1 are about the same as during February. The late spring movement is necessarily moderate, because the stock is nearing exhaustion; but in recent years the April movement has often exceeded a million barrels. The more extensive use of the oiled-paper wrap on boxed apples and shredded oil paper in barreled stock tends to prolong the active season into the summer months and until the new crop begins to enter the market in quantity. But as a rule, the June total movement of apples out of storage has not exceeded 100,000 to 400,000 barrels.

COMMERCIAL BY-PRODUCTS

The year 1919 was not a great apple year but the census indicated that about 7,000,000 barrels of apples were used for manufactured products; that is, about half as many as were shipped in car lots as fresh fruit. About one-seventh of the fruit used for manufacture was dried, nearly one-seventh canned, and the rest made into cider, vinegar, jelly, and miscellaneous preparations.

CIDER AND VINEGAR

Production of cider and vinegar in the census year 1919 was valued at $25,000,000 compared with less than $8,000,000 in 1914. All but about 10 per cent was produced in the barreled-apple region. The cider and vinegar industry employed that season over 3,000 persons and used material and supplies worth over $15,000,000. More than half the production was in the four leading States—New York, Illinois, Pennsylvania, and Massachusetts—while Michigan, Virginia, and Missouri ranked fifth, sixth, and seventh. Not all of the vinegar production is from apples and it is not possible to estimate closely, yet apparently 10,000,000 to 20,000,000 bushels of apples are required each season for cider and vinegar. These are taken mainly from that part of the general production not reckoned as commercial and mostly from the production of standard eastern main-crop varieties.

At present, far more eastern apples are used in the manufacture of cider and vinegar than for drying or for canning. Probably the development of the market for sweet cider has no more than begun. Through the use of preservatives, or by canning or condensing, it is becoming available throughout the year at prices below any similar product. Its hygienic, dietary, and beverage qualities seem to be attracting more and more attention on the part of the consuming public.

Little systematic effort has been made to increase the demand and but comparatively little has been done in the line of developing commercially a high-grade product from the varieties of apples producing especially rich, high-flavored juice, or to extend the active market season by cold storage, canning, concentration, or preserving.

The problem of preserving cider is to obtain an unfermented product of good flavor and pleasing appearance. Commercially, the choice seems to be between pasteurization and the use of such preservatives as benzoate of soda. Neither cold storage nor concentration by heat or cold seems to have been proved a practical method as yet. With pasteurization the difficulty is to prevent subsequent

fermentation. The use of any preservative is more or less objectionable as affecting the wholesomeness and quality of the product.

One of the main difficulties with the commercial product is the lack of uniformly reliable quality. By blending various varieties of apples, progress has been made toward standard of quality.

By the most efficient methods of extraction, manufacturers have obtained as high as 4½ gallons of juice to the bushel of fruit, compared with 3 gallons for the small farm equipments and about 4 gallons for average commercial plants. The fruit is ground between cylinders and the juice extracted under hydraulic pressure. The resulting pomace is rather dry and keeps well. It is of considerable stock-feeding value and may be stored in silos. Vinegar manufacture is a staple industry which uses much of the very low-grade apple surplus. There are centers of the business in all of the great apple regions. Large wooden tanks used for storing cider and vinegar at the factory are shown in Figure 15.

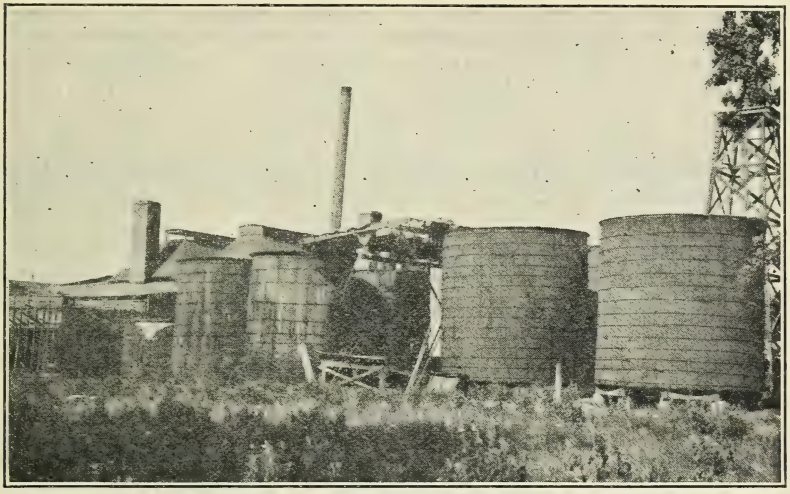

FIG. 15.—Storage tanks at a vinegar factory

Some of the large midwestern orchards have cider and vinegar factories on the premises or at least a mill and press which render the cull apples into juice to be shipped to a vinegar factory for refining and ripening.

CANNED AND DRIED APPLE OUTPUT

The census of canned apple manufactures for 1921 showed an output equivalent to 2,239,428 cases of 24 No. 3 cans, compared with 2,447,927 in 1919, and 1,514,939 in 1914. In 1921 New York reported 601,000 cases, or over one-fourth of the total; Washington, 440,000; Maine, 302,000; Oregon, 280,000. The output of 1921 required about 3,000,000 bushels of apples.

The local evaporating or drying factory often supplies an important market for stock not good enough for packing. The equipment performs most of the work by machinery, conveying the fruit by a chain elevator to the machine for paring and coring, and thence through a

vat where it is bleached in sulphur fumes. Then it passes through a slicer and goes to the drying room, where hot air removes all but about 20 per cent of the moisture. Some apples of small size are dried without slicing, and some are chopped and dried. The apple parings are dried and sold for various manufacturing purposes.

The census of manufactures for 1921 showed an output of 22,975,189 pounds of dried apples, compared with 46,623,599 in 1919, 54,957,003 in 1914, and 44,568,244 in 1909. The product for 1921 was evidently much reduced by the extremely short eastern crop of that season. New York and California are the heaviest producing States. In 1919 California produced 15,477,039 pounds and New York 13,524,019 pounds of the total of 46,623,599; most of the balance of approximately one-third was made up by Arkansas and Washington, with 6,720,070 and 4,044,090 pounds, respectively.

Average car-lot shipments of dried apples for the five years 1919 to 1923 were equivalent to 34,908,000 pounds. Total shipments do not follow the output closely from year to year, as this product is capable of storage for considerable periods. Accumulated supplies may be drawn upon to offset a temporary deficiency, as indicated by the export figures for 1921, which total 19,962,306 pounds of dried apples, only about one-fifth less than in 1919, although total output in 1921 was less than half that of 1919. Some influence from the light crop of 1921 was apparent in import figures, however, which increased from 158,085 pounds in 1919 to 1,781,759 in 1921 and dropped to 45,664 in 1922.

In addition to the factory product recorded by the census there is some farm production of dried apples in Eastern States, either by mechanical evaporation or by sun drying, but no definite figures on this item are available.

FORECASTING THE MARKET

The critical market time for growers is around the picking season. Most producers are looking for buyers then and they are anxious not to sell too low. If the grower's ideas are based on full information and a reasonable weighing of conditions, he is able to take a position with confidence in deciding whether to accept early bids or to wait for better terms. His information is of two general kinds—the crop news and market conditions. Crop news may be had from Federal and State departments of agriculture.

SOURCES OF INFORMATION

Information on crops, markets, and car-lot shipments is supplied during the most active part of the apple season by field stations of the United States Department of Agriculture at Rochester, N. Y., Martinsburg, W. Va., and Benton Harbor, Mich., and throughout the year by the market stations at Atlanta, Baltimore, Boston, Chicago, Cincinnati, Fort Worth, Kansas City, Minneapolis, New York, Philadelphia, Pittsburgh, St. Louis, and Washington. Reports of marketing conditions in the competing boxed-apple areas also are supplied through offices at Spokane, Wash., and San Francisco, Calif. Reports on conditions affecting the market situation should be watched from the beginning of the season. The lighter the general apple crop, the better will it pay to take care of what apples there are and to make the most of them.

USEFUL INDICATORS

The September estimate of the commercial crop affords perhaps the most convenient indicator for those who, like the majority of main-crop producers, expect to sell in September and in early October. Comparison of the September estimate with the December price of the Baldwin in New York City shows that the price varies somewhat according to the estimated total commercial production. Relation of the later estimates to the price established is still closer, but the earlier production estimates have proved reasonably accurate. In forecasting the price and comparing the situation with preceding years some allowance should be made for other price influences, especially the quality and location of the crop, the size and quality of the foreign crops, the apparent demand for fruit, and the price level and price tendency of products in general. The actual combined effect of all such conditions is often considered to be summed up roughly in the prices quoted for early fall apples in the great market centers. Dealers accordingly place considerable reliance on the early prices as well as on estimated production, but with due allowance for other features of the situation.

THE FOREIGN OUTLOOK

Export markets in big crop years have often saved the domestic market by taking the surplus, but they are governed by their own conditions of supply and demand and the opening prices seem to have little relation to prices in the United States. In general, the official report of a short crop in Europe, particularly in England, may be taken as an indication of a coming active demand for American apples. High early prices in Europe for Virginia and eastern New York apples in September are likely to interest export dealers and start them traveling through the orchard districts, adding to the competition among early buyers and strengthening the position of growers.

VARIETIES IMPORTANT

The relative quantity and quality of the leading varieties in the season's crop are important in regard to the probable selling price of any one of the varieties. These particulars are included in the detailed crop reports. If New York and Michigan have a large crop of fall apples and the late varieties are lighter, it is often discovered that the stock available for winter markets is less than assumed from the size of the estimated total crop. If the Rhode Island Greening crop is short in western New York, that variety may sell higher than the red kinds. If the Northern Spy is light and poor in New York but good in Michigan, prices of that variety may show extremely wide ranges. Each season has special conditions affecting the relative market position of the leading commercial varieties.

Crop shortage in New York and Michigan, which produce nearly 40 per cent of the average crop of the barrel region, is likely to result in scarcity and high price of the characteristic varieties, Baldwin, Rhode Island Greening, and Northern Spy, also the Oldenburg and other fall kinds. Crop failures in Pennsylvania, Virginia, and West Virginia concern one-fifth of the barreled crop and result in a probable shortage of barreled York Imperial, Winesap, Stayman Winesap, and Yellow Newtown. Crop damage in the Middle West affects

especially the supply of barreled Ben Davis, Gano, and Jonathan. Crop conditions in New Jersey, Maryland, Delaware, eastern New York, and southern Illinois have much influence on the supply of very early apples including Yellow Transparent, Red Astrachan, Williams, and Early Harvest. Shortage in the boxed-apple region of the West favorably affects the demand for dessert varieties produced in the East.

USING THE EARLY PRICES

In making a forecast the early prices quoted in producing sections are a help, including prices of the early varieties and of the late varieties in the earliest shipping regions. Sometimes early apples are abundant and the main crop a failure, or the other way around. But as a rule, the early varieties, more especially the so-called fall kinds, sell at a general level indicating the strength and trend of the market for the main crop.

Quotations of the first main-crop apples come in September from the Virginia and West Virginia shipping points and from apple regions of Missouri and adjacent States. These early sales afford some indication of the coming general market, if terms and the reported quality are carefully noted. Reports of early contract sales come from the Northwest at about the same time and are valued as indicating the general feeling of the trade. Prices of summer apples at least indicate the condition of the demand for fruit. Prices of fall apples from New York, Pennsylvania, New England, Michigan, Missouri, and Illinois are to be noted with considerable care.

THE MAKING OF EARLY PRICES

The price of the early apples will itself depend somewhat upon the general condition of the fruit and produce markets and somewhat upon the proportion and location of the early fruit in the season's crop. Early fruit is not so easily shipped to distant markets and only the usual sources of supply of any particular market are of prime importance. The grower of early apples should watch the principal early shipping sections, including southern Illinois, Kentucky, Tennessee, New Jersey, Maryland, Delaware, and eastern New York and note what the official reports say about the early crop. The prices of other fruits are worth consideration, and the consumers' general state of prosperity and employment. If conditions promise well, the grower will plan so that his early apples will not be neglected in the rush of other work, and baskets, men, and teams will be on hand. The perishable early crop is really harder to market than the late crop because of the promptness, speed, and care needed in handling and transportation.

MAIN-CROP PROSPECTS

Spring and early summer news of the main or late crop is necessarily indefinite. A full bloom is often frosted and it may fail to set any large crop, especially if the trees bore heavily the year before. Either the weather, tree weakness, or insect attack may cause a heavy drop in early summer. By July and August indications become more reliable but may be considerably changed by insects, drought, or other weather conditions. Now that the orchard pests are fought with fair success, the most common midseason influence is rainfall.

Too much moisture favors blight, blotch, and scab, and interferes with spraying. Too much rain late in the season increases the size of the apples at the expense of color and keeping quality. Drought means small apples with the yield below early promise.

The September and October reports in many parts of the country are the most important to the grower. The country-wide commercial production is of great significance. A large or small total production in the intended market territory should be noted as affecting local demand and supply, but it is the commercial crop which furnishes the market shipments and is the source of direct competition everywhere. A commercial crop above 30,000,000 barrels is considered large and much below that is small. Extremes in recent years have been 22,000,000 in 1921 and 36,000,000 in 1923. Location of the crop may be important. The nearer the region of shortage and the more distant the surplus the better the local outlook.

Conditions in closely competing sections are to be taken into account. Michigan and New England compete with New York; eastern New York with New Jersey; Virginia and West Virginia compete to some extent with both the early and main crop sections elsewhere; the Central West feels most heavily the competition of the boxed-apple region because of lower freight charges. The East also competes with the Central West in favorable seasons.

The greatest indicators of the general apple situation and outlook are New York and Washington. Next in importance are Michigan and Virginia. The probable surplus in Nova Scotia, Ontario, and British Columbia is an important feature of the general situation. Condition of the apple crop as well as production is to be considered. When scab or sooty blotch covers the greater part of the northern crop or the codling moth becomes unusually troublesome in the western box region, or when scab, rust, and bitter rot are especially injurious in the South, the quantity of superior apples will be greatly reduced with a corresponding premium for the most desirable lots. Large quantities of inferior apples from any leading section tend to depress the whole tone of the market, as indicated by prevailing quotations in such seasons. Yet a good premium is always paid for the apples which have escaped damage in bad seasons by reason of unusual care or good fortune.

YIELD VARIATIONS

The tendency to produce heaviest crops on alternate years seems to be due in some degree to the tendency of leading eastern orchard varieties to bear more heavily on the years of even date and correspondingly light crops on the odd years. Occasionally there are two full-crop years or two light-crop years in succession, but hardly ever more than three heavy crops of barreled apples in any series of five years. The tendency is somewhat more toward even crops with the increased plantings of such annual bearing varieties as Ben Davis and Oldenburg.

Production in Virginia, West Virginia, Pennsylvania, and New England tends to coincide somewhat with that of New York. Middle western production is more irregular, because severe weather changes cause frequent crop failures. Most damage is caused by cold wet weather in May. The commercial crop of New York is the key feature

of the barrel region. Quality in the East is often affected by excessive rains which interfere with spraying and increase the damage from insects, blight, scab, and sooty blotch.

LOCAL CONDITIONS

The general situation must be known for a fair judgment, but local conditions are of prime importance. In the specialized apple districts the principal growers are likely to get together frequently by telephone, at public meetings, or by visits. Thus they keep one another informed regarding the way in which the local crop is showing up at harvest time. They are interested in discussing the number and activities of the buyers and the terms of contract offered; whether the dealers are eager for business or indifferent; what prices they are paying and whether they are buying for shipment, storage, or export.

FAVORABLE SEASON

The kind of year the grower likes to see is one with a light general crop but good local production of good quality; the consumers busy at good wages; export buyers active; a good labor supply, plenty of barrels, baskets and empty cars, and many competing buyers coming to the farm. Opposite conditions include a heavy general crop, with much fruit of low shipping quality and few buyers in sight.

MISTAKES IN FORECASTING

Probably the most common error in sizing up the outlook is to give too much weight to conditions in one's own orchard or neighborhood. Another is failure to accept the vast and almost incredible difference that often appears between indications early in spring and actual crop conditions in the same regions late in summer. Too much attention may be given to more or less prejudiced reports and gossip of the trade. Frequently one's viewpoint may be influenced unconsciously by the good or bad conditions which prevailed the season before. Sometimes there is failure to give sufficient weight to some new or unusual influence or, on the other hand, the effect of a new but limited condition may be emphasized out of proportion to its importance. Dealers and growers alike make such mistakes, but many learn from experience to forecast the majority of market seasons fairly close to the actual outcome.

LONG-RANGE APPLE OUTLOOK

The apple outlook over a term of years seems reasonably good from the producer's point of view. One of the most favorable aspects is the decrease in planting during the period of unsettled, abnormal conditions and high costs from 1914 onward. Such periods of light planting in the past have been followed in due time by corresponding periods during which fewer new orchards come into bearing. Meanwhile older orchards have been decreasing from one cause or another and the situation tends to favor the producer until a period of active new planting affects production. The apple industry for nearly a century past has experienced a succession of such alternating periods of heavy and light planting.

Horticultural writers as early as 1850 were anxiously discussing the danger of overproduction based on what would seem now a small area of new plantings in New York. There was another time of

discouragement just before the end of the century and there was talk of cutting down apple trees. Tremendous plantings in the Middle West discouraged the eastern growers. The most recent overproduction panic seemed based on the rapid growth of the western boxed-apple industry. Possibly, as in the past, the growth of population, the increase of exports, and the commercial survival of only the best-adapted apple districts will take care of the problem.

DISTRIBUTION OF BARRELED APPLES

The market stronghold of the barreled apple is in the East. Eastern apples constitute more than half the average total of car lots shipped and the great cities from New York west to Chicago and south to Atlanta take more carloads of barreled than boxed apples. In comparing actual quantities of receipts, about 30 per cent must be deducted from the number of cars of barreled apples to balance the heavier loading of cars of boxed apples. Equivalents made use of in this bulletin for general purposes of comparison are 756 boxes or bushels per car of boxed apples, and 175 barrels, or 525 bushels per car of barreled stock, a proportion of 1 car of boxed apples to 1.4 cars of barreled.

The principal barreled-apple regions find their best markets in the nearest great consuming centers. They also extend their market territory along the lines of least competition in season.

NORTHEASTERN REGION

The New England States have many home markets but ship some apples to New York, and in favorable market seasons Maine and Massachusetts Baldwins appear as far west as Chicago.

Eastern New York ships mostly to cities of New York and New England but the distribution of apples of the western New York section is very general east of the Mississippi. Destination records of 12,287 western New York shipments show that 4,903 carloads, or more than one-third, were sent to 212 towns and cities of New York State. Pennsylvania received about one-sixth, New Jersey one-eighth, and Ohio one-tenth. These four States took over three-fourths of the western New York shipments. Connecticut and Massachusetts each received over 400 cars. The few hundred cars remaining went mostly to the Middle West and the South. Shipments were made to about 30 States in all.

Comparison of primary destinations over a five-year period shows a tendency toward more condensed distribution. A greater number of cars were shipped to northeastern markets in 1923–24 as compared with 1918–19, and not so many to the Southwest. Such a tendency may be explained as a result of high freights and the increasing competiton of northwestern and southern apples in middle-western and southern markets.

One or more large cities get most of the western New York shipments sent to each State. About a dozen cities take five-sixths of the shipments, yet there are hundreds of smaller places that take from 1 car to 100 cars. Evidently the car-lot movement goes chiefly to supply the cities, although many of these cars are later reshipped or diverted to smaller places. New York, Pittsburgh, Philadelphia, Cleveland, and Cincinnati are market stand-bys, receiving large

quantities of western New York apples regularly year after year, although Boston, Chicago, and St. Louis are important when crops are short in other sources of supply.

SOUTHEASTERN REGION

Shipments from Maryland, Delaware, and New Jersey are chiefly of early varieties to Philadelphia, New York, Boston, Baltimore, and to the smaller markets of the Northeast. New Jersey sends heavy supplies by rail and motor truck to New York and Philadelphia and ships some car lots to New England in favorable market seasons. Pennsylvania apples find leading markets within the State and in New York.

Reports from a cooperative association in western New Jersey show distribution of 223 cars of apples by rail, or over half the car-lot shipments of the State, and the equivalent of 184 cars by truck in 1923. Of the 29 destinations shown, almost all were in the near-by northeastern States. New York City received 69 carloads of these apples by rail and approximately 75 by truck. Brooklyn received 12 carloads and Newark 66, all by truck. Of 54 cars sent to Massachusetts, Boston took 45. Shipments to Connecticut were 25 cars and to Pennsylvania only 23 by rail, Philadelphia receiving an additional 25 carloads by truck. Two cars went as far west as Louisville and 10 were exported.

SOUTHERN REGION

In proportion to its volume of production and considering the excellence of many of its leading varieties, the southern crop—mainly that of Virginia and West Virginia—seems less widely distributed in the greater markets than the crop of the Northeast. Apples from Virginia and West Virginia appear in hundreds of markets in the United States and Canada, but reach fairly heavy volume only in New York, Philadelphia, Baltimore, Washington, Richmond, and Norfolk. They appear comparatively little in the unloads of northern and midwestern markets. Apples from States south of Virginia go chiefly to local markets except the very early apples of Tennessee and Kentucky and the fall apples in boxes from Georgia.

MIDWESTERN REGION

Midwestern apples are somewhat local in distribution, seldom appearing in eastern markets, and in the South prominent chiefly in Birmingham, Memphis, and New Orleans. The more southern States of the Middle West—Arkansas, Missouri, Illinois, Oklahoma, and Nebraska—supply southern markets to a considerable extent; the more northern States—Michigan, Wisconsin, Minnesota, Indiana, and Iowa—find their markets chiefly in the North Central area. Ohio finds principal outlets in the Ohio Valley markets, but has fairly extensive distribution east and south.

Michigan shipped over 9,200 cars in the season of 1923–24. Records of primary destinations are available for 5,636 cars shipped September to May. More than half of them went to points in Michigan and Illinois, over 1,700 to each State, besides numerous boatloads not included in the car-lot reports. Chicago alone received about 1,500 cars and Detroit, 700. Ohio received 861 cars. About four-fifths of them went to Cincinnati, Cleveland, Toledo, Akron,

Columbus, and Dayton. Copies of the itemized report may be obtained from the Bureau of Agricultural Economics. All but about 500 cars were shipped in September, October, and November, and of these nearly one-half in October. Comparison with preceding years indicates that distribution was about as usual, the large markets of Illinois, Michigan, Ohio, Wisconsin, and Indiana taking most of the shipments. Comparison with unload reports in city markets suggests that Chicago received many of the shipments not included in the incomplete report of destinations.

SOURCES AND SEASONS OF MARKET SUPPLY

The new crop begins to move from the South before old stock in cold storage has been quite exhausted. Southern and southwestern apples start about the middle of June. Movement at the height of the season in October and November includes shipment to storage. After December, removals from cold-storage supplement shipments from common storage in producing sections, and nearly replace them during the concluding months of the season. Monthly volume of shipments from nine leading States is shown in Figure 16.

The summer supply of Yellow Transparent, Early Harvest, Red Astrachan, Williams, and other standard early varieties is gradually replaced by Oldenburg, Wealthy, McIntosh, and other second-early kinds. The September movement is chiefly of the fall varieties, but the early winter kinds, including York Imperial, Rhode Island Greening, and Northern Spy, begin to move from Virginia, New York, Michigan, Illinois, and Missouri late in the month. Most of the States reach height of activity in October, and one-third or more of the barreled apples move within the month, including both fall and winter kinds. New York, Michigan, Virginia, Illinois, and most of the main-crop apple States are at the top of their shipping volume in October. The November shipments fall off by one-half or more. Shipments from December onward are mostly out of storage in New York and Virginia, although supplemented by a considerable total from other sections. Maine continues to ship exceptionally late out of common storage.

Shipments December to June comprise a few hundred cars for Illinois, Michigan, Ohio, and other States. Virginia ships several hundred cars of Winesap, Yellow Newtown, and Ben Davis out of cold storage in May and June. New York, Illinois, and Missouri move considerable eastern late-storage fruit. May shipments of barrels and baskets were between 200 and 700 cars per year from 1919 to 1922 but exceeded 1,200 in 1923 and 1,300 in 1924. June shipments have usually averaged about 200 cars in recent years, but reached close to 1,000 in 1922 and over 500 in 1924, besides some shipments of boxed apples.

The greater part of the boxed-apple shipping movement is in fall and winter, exceeding barreled apples at times from October to February, even though the boxed-apple crop is lighter. Barreled apples commonly lead in summer and early fall because of the larger proportion of early varieties in the East and they lead again from March to June.

Because of late eastern shipments from country cold storage, and because of the large quantity held in cold storage for long periods after

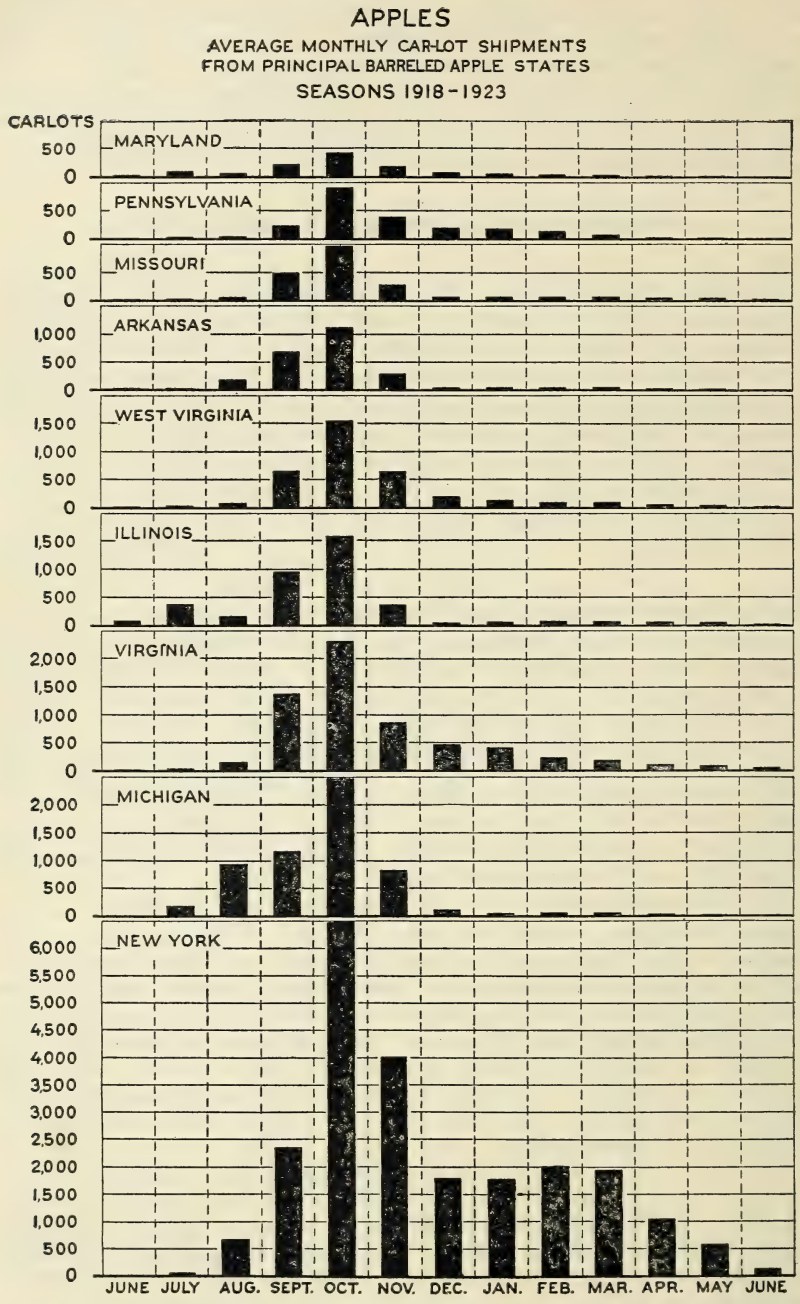

FIG. 16.—Heavy shipments in October are largely movements into storage. Shipments are fairly uniform during the months of winter and early spring

shipment from the producing region, the volume of shipment does not correspond in season with the volume of unloads at consuming centers.

Twelve large cities using about one-third of the total annual car-lot shipments, boxed and barreled, unload only about one-fifth of the total shipments from all States during the height of the shipping movement in October. Before and after the peak of the shipping movement their proportion of that movement is much greater, often one-half. In May and June the 12 cities often unload more cars than are reported shipped during that time, because of withdrawals from late storage of apples that were shipped from producing sections at the height of the season. Car-lot shipments are reported when started from the first shipping point and not when reshipped from storage.

APPLES PER CAPITA

Great city market districts unloaded about 1 bushel of apples per inhabitant yearly from 1918 to 1923, as shown in Table 12. This is somewhat less than the average per capita for the whole country, based on production shown in the 1910 and 1920 census reports. But 15 per cent of the crop may be allowed for apples used in by-products and roughly 10 per cent for export. Finally the city supply includes 10 per cent of home-grown stock, which is not reported in car-lot receipts of city markets Thus the adjusted figures show that the total consumption per capita apparently does not differ greatly as between city and country.

Of 12 large city market districts, Cincinnati, Chicago, Pittsburgh, and Kansas City show the heaviest per capita consumption of car-lot apples, about 1.3 bushels per year, but the figures include some reshipments from storage to other cities. Boston, Detroit, and Philadelphia show only three-fifths to two-thirds of a bushel yearly and New York barely exceeds nine-tenths. The differences in actual consumption probably are slight. The cities showing light car-lot consumption are near producing regions, which in some instances supply in small lots as high as 25 per cent of the city's requirements. Reshipments in small lots to other markets also must be taken into account.

The average supply of the large city markets will figure out close to 1 bushel yearly for each person, as indicated in Table 12. Allowing 125 medium-sized apples to the bushel, each consumer supplied from the great city markets uses two or three apples per week, besides 20 to 25 more during the year in the form of dried or canned apples, cider, and vinegar. On the basis of the estimated crop of about 200,000,000 bushels, in the United States in 1923, however, the maximum per capita consumption in the United States would be nearer 2 bushels for the season or four apples per capita weekly. Combined estimates therefore indicate a per capita consumption ranging from two to four apples per week. Similar estimates for the British Isles average about two apples per week. In most countries of continental Europe the consumption of apples is comparatively light.

GREAT CITY MARKETS

Large city markets which unload many cars from the eastern barreled-apple region are shown in Figure 17 in the order of their importance as consuming centers for barreled apples. Comparative

quantities of boxed apples unloaded in these markets are also indicated and show in a measure the extent of competition between the two regions. Allowance must be made, however, for quantities of local supplies which are trucked or hauled from the near-by producing sections, as well as for numerous shipments in small lots to commission merchants.

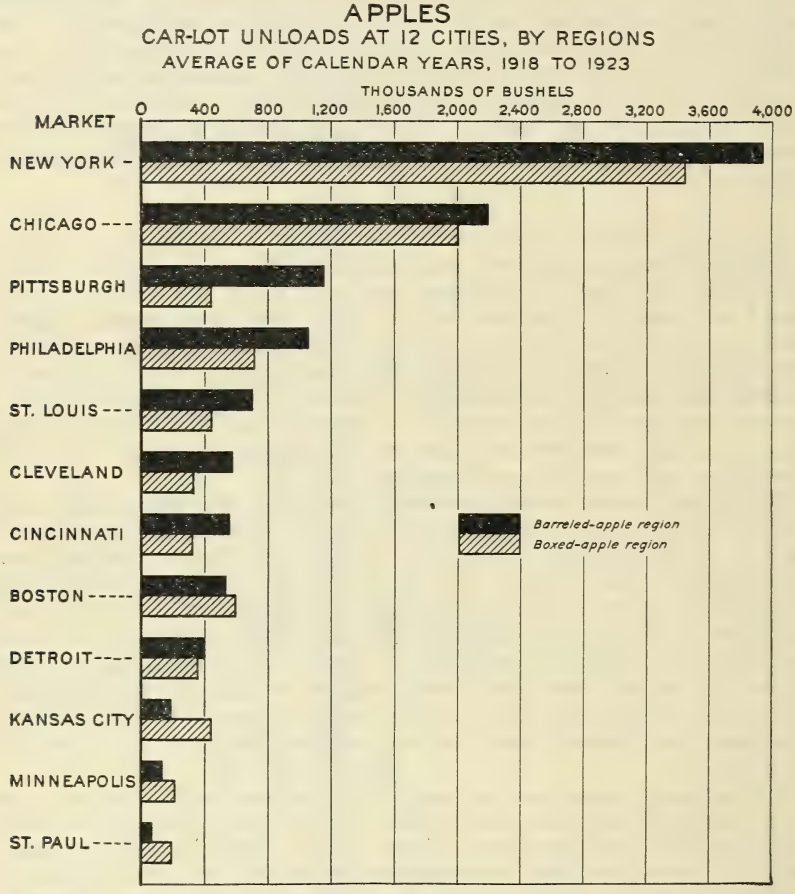

FIG. 17.—Receipts of barreled apples are comparatively heavier in the great cities of the East Car-lot unloads are compared in bushels on the basis of 525 bushels to a car of barreled apples and 756 to a car of boxed apples

New York City is far in the lead, unloading nearly twice as many bushels of barreled stock as the next largest consuming center, Chicago. Pittsburgh unloads more barreled stock than Philadelphia, but takes about half as many apples in boxes. Boston unloads more boxed supplies than barreled stock, but receives large quantities in barrels, boxes, and bushel baskets from local sources.

CITY MARKETING

Selling methods for eastern apples are varied, but the general practice is more simple than for western boxed apples. The scarcity of large lots of reliably uniform grades and sizes and the nature of the

barrel package has stood in the way of auction selling, although that plan has been tested in a small way. Not so many sales are arranged through brokers, partly for the same reasons and partly because the barrel sections are fairly close to large markets and more direct arrangements become practicable.

OWNED STOCK

City dealers know the location of the more desirable orchards and are likely to send buyers to contract for the crops at so much per barrel, packed and delivered at station or cold storage.

DIRECT PURCHASE

City wholesalers also buy of country dealers either f. o. b. country shipping point or to be delivered at the city terminal. Many sales are on wire orders, arranged between country and city dealers by telegraph, with or without the aid of a broker. The services of a broker are most likely to be employed when the car is bought from another dealer who has employed the broker to obtain competitive bids quickly.

COMMISSION

Shipments to commission dealers are mostly from shippers with whom long standing and presumably satisfactory relations have been established or from growers with holdings too small in quantity or too far distant from the usual shipping center to attract buyers. Shipments on commission become more common in years of heavy crops, and during such seasons dealers depend on them more.

A CAR-LOT SALE

The typical car lot of barreled apples is most likely to have been bought by the receiver direct from the country holder and shipped at once to the city for sale or storage. Sometimes the car may have been loaded by a local dealer and shipped to the city receiver, the terms of sale having been arranged by telegraph or indirectly through a broker. Some cars come from holders who have been loaned money by commission firms with the understanding that the lender handle the crop on a commission basis, or the car may have come from holders who wish to sell on a new market. Relatively few cars from the barreled-apple region are from associations of growers to be sold direct or handled through their city agency.

CHARGES

Commission rates are from 5 to 20 per cent according to the city, the size of shipment sold, and the dealer's practice. Some commission dealers charge the shipper 3 to 15 cents per barrel, most commonly 10 cents, for cartage from freight yard to store. Terms and conditions vary somewhat but in general the commission for selling large lots on which no advances have been made is from 7 to 8 per cent of the gross proceeds. In the case of fruit on which large advances have been made the usual commission for selling is 10 per cent, no interest having been charged on the money advanced. A commission of 10 per cent, sometimes more, is charged also on less than carlot shipments or on small shipments by several growers in the same car, and this rate is likewise applied to sales made through the receiver's stores rather than at the docks or yards. Some com-

mission merchants employ men in shipping districts to solicit consignments to them. Thus in the case of some shipments, after deducting the pay of the representative at shipping point, commission men receive an actual net fee of only about 5 per cent.

Sales of owned stock show, according to reports from several large markets, about 5 per cent added to cost when selling to jobbers and 10 per cent on small sales to retailers or others. In any event the buyer hauls his purchase or pays for delivery. The retailer also usually pays for delivery, although some jobbers include free delivery service to the station or to stores within city limits. The receiver sells apples either at the railroad yard, dock, or pier, or at his store, perhaps placing the apples in cold storage before taking them to the store.

SALES FROM TRACK OR STORE

Track sales are common in large cities where the cars can be brought close to the market center and there is room to accommodate the buyers who handle the stock. New York, Pittsburgh, Cincinnati, and Baltimore have facilities for track or dock sales. In New York, Philadelphia, Cleveland, Chicago, and Boston, and, in fact, in a great majority of city markets a lack of track facilties favors disposal from the dealers' stores or wagons. Where either plan is practicable, the largest dealers prefer track sales because of promptness, simplicity, and low cost. Store sales favor the buyers' convenience, but are at higher prices because of the cost of hauling, handling, and storage. Many receivers have no time, space, or clerical help to accommodate buyers of small lots; others, especially those in smaller cities, sell large lots to jobbers and small lots to retailers at correspondingly higher prices, either at the track or at the store.

SALES IN SMALL MARKETS

In small markets the receiver is accustomed to attend to wholesale orders of any size and sales are mostly from the store. In such markets the dealer may buy mixed car lots put up at shipping point or reloaded and shipped from the nearest great distributing market. A group of small dealers sometimes unites to buy a car lot. Chain stores frequently buy car lots in shipping sections. Many small towns receive no car lots but are supplied a few barrels or baskets at a time by freight or express or by wagon and motor truck.

FEATURES OF LARGE MARKETS

NEW YORK

If car-lot receipts of apples at New York are considered as bushels, the unloads of barreled apples average over 50 per cent of each year's total. The leading sources of barreled supply are New York State and Virginia, receipts from the former as a rule amounting to about 70 per cent and from the latter to 12 per cent of the barreled stock unloaded. Maine ships the Baldwin and Wolf River. Vermont sends McIntosh and Northern Spy. West Virginia, Pennsylvania, and Maryland supply York Imperial, Winesap, Stayman Winesap, and other kinds. Washington, Oregon, and California ship a long list of varieties and furnish nine-tenths of the boxed apples.

Average receipts of apples in car lots for the period 1918 to 1923 are shown by States of origin in Figure 18.

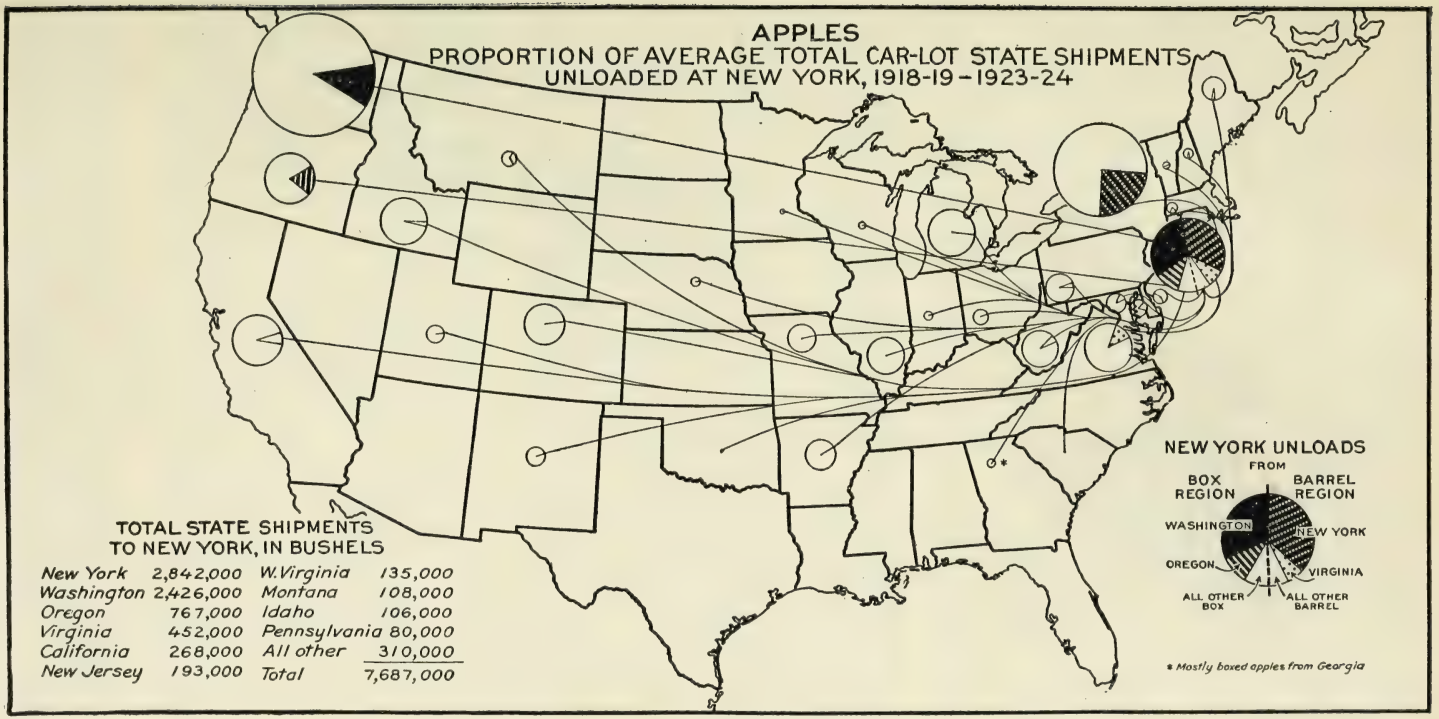

FIG. 18.—New York State leads in the total supply of apples unloaded in the city of New York

Oldenburg during September, Wealthy during September and October, and Twenty Ounce from October 1 to December 15 are the principal fall varieties from New York. A considerable volume of the McIntosh is offered between November 15 and the end of the year, and an occasional car of this variety is seen on the market as late as the last of April. Northern Spy is sold chiefly between December 1 and March 15, but supplies are never very heavy. By far the most important varieties offered here from New York State are Baldwin and Rhode Island Greening. Greening appears as early as October 1 and dominates the market for cooking apples throughout the season. Baldwin appears about the first of November and continues in steady volume until about the last of May. It is considered the market leader throughout this period of over six months.

The principal variety from Virginia is York Imperial, appearing about the 1st of October and coming in regular supply until the 1st of March. Winesap, Stayman Winesap, Ben Davis, and Rome Beauty are sold in lighter volume between December 1 and March 31. Yellow Newtown or Albemarle Pippin from Virginia is offered in New York City between the middle of March and the middle of June.

The standard pack for barreled apples for sale locally, and the one upon which practically all buying is based, is the A grade, 2½ inches and upward in diameter. The larger sizes (2¾ inches upward and 3 inches upward) command from 50 to 75 cents per barrel more for each one-fourth inch in diameter.

Most shipments from the Hudson River Valley come down the river on steamboats and are hauled to the receiver's store where they are sold. Rail shipments from the Hudson River Valley, western New York, Vermont, and Maine, which represent the great bulk of the receipts of eastern apples, are loaded upon floats at Sixty-eighth Street, New York, and at Weehawken, N. J., and are lightered in their original cars to Pier 17 at Barclay Street, where they are unloaded and sold. The receipts from the South arrive at Jersey City and are lightered across to Pier 28, where they are unloaded and sold. Most of the barreled apples are sold at these two places, Pier 17 and Pier 28.

All delivering is done by the receivers as the buyers' trucks are not allowed on the piers, and the apples are delivered to the buyers' stores about as cheaply as the buyer could haul them. Sales are made on "dock" basis and 12½ to 20 cents per barrel for cartage is added to the sale price, depending on the section of the city to which the stock is to be delivered. In many cases, when on account of a dull market a receiver is unable to "clean up" at a satisfactory price, he hauls the apples to his store and sells them in smaller lots there. In such cases shippers are charged for cartage and the commission for selling is a little higher. But because usually it is possible to get a slightly higher price for small sales made from the stores, some shippers request their receivers to follow this procedure with all of their cars.

PHILADELPHIA

Receipts at Philadelphia from the barrel region represent about 60 per cent of apples arriving in car lots. Nine-tenths of the remainder are from Washington. The chief eastern sources of supply are New York, Pennsylvania, Virginia, Delaware, West Virginia, Maryland,

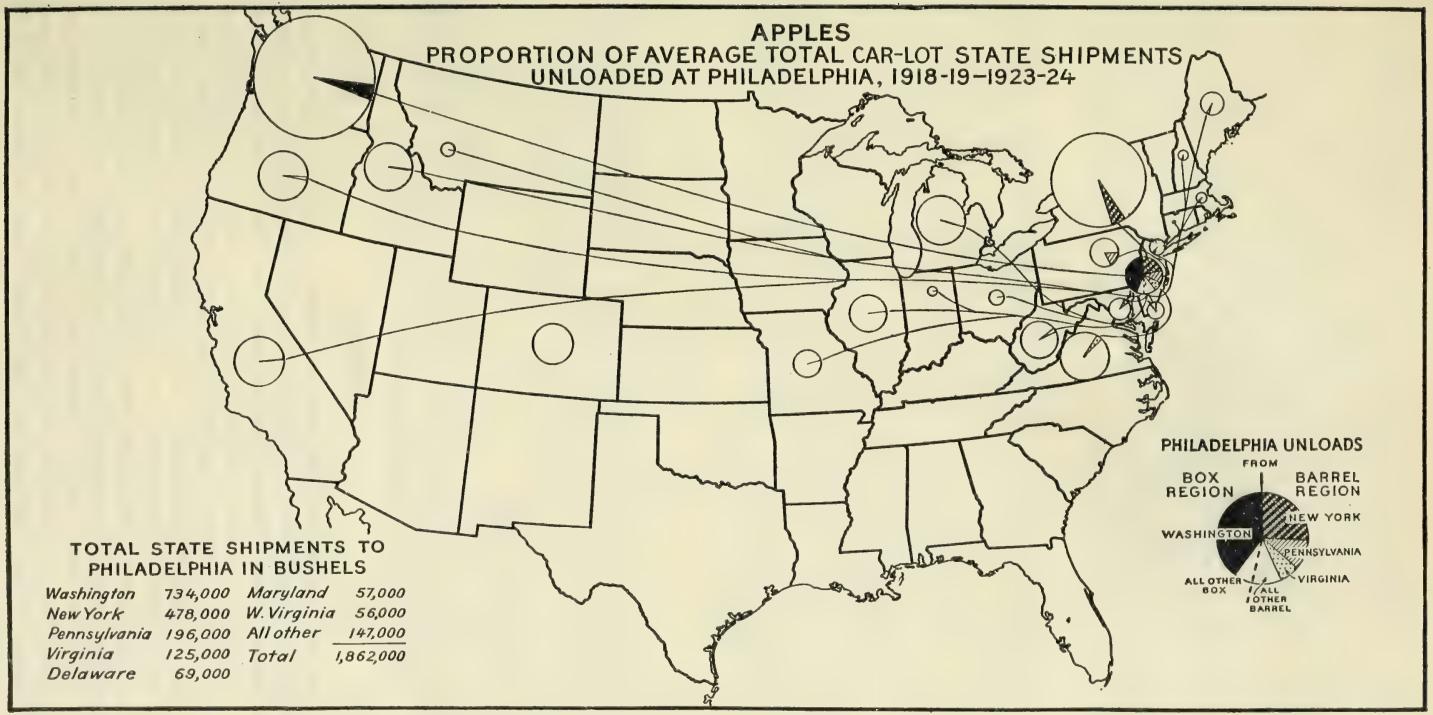

FIG. 19.—Pennsylvania and Virginia apples are well represented in the near-by market of Philadelphia

and New Jersey. In years when the southern Pennsylvania, Maryland, and Virginia crops are good, New York is not so large a factor. Figure 19 shows average unloads of apples at Philadelphia by principal sources of supply for the period 1918 to 1923.

The most popular varieties in the approximate order in which they appear on the market, beginning in the fall are, from New York—Oldenburg, Wealthy, Gravenstein, Maiden Blush, Twenty Ounce, Hubbardston, Rhode Island Greening, Tompkins King, Northern Spy, Baldwin, and Ben Davis; from Pennsylvania, Maryland, and Virginia—Alexander, Wealthy, Jonathan, Grimes Golden, Smokehouse, Stayman Winesap, Stark, Rome Beauty, Winesap, Gano, York Imperial, Ben Davis and Yellow Newtown or Albemarle Pippin. There are some cars of Delicious during the fall months from this section.

Of the New York apples, Baldwin and Rhode Island Greening are the most popular. Of the supplies from other sections, Jonathan is a better seller than Grimes Golden in the fall. Stayman Winesap, York Imperial, and Rome Beauty are the most popular winter varieties, although limited quantities of Winesap and Stark meet a ready sale. Ben Davis and Yellow Newtown move best in the spring.

Practically all barreled apples are delivered by rail at the Market House, Thirtieth and Chestnut Streets. Here they are unloaded on the platform and samples are opened for display and sale.

The stock from New Jersey comes mostly in five-eighths bushel baskets and is hauled by truck. Stock from Delaware arrives mostly in bushel baskets and bushel hampers, although many carloads are shipped in barrels for storage.

BALTIMORE

Leading eastern sources of the Baltimore apple supply are Virginia, West Virginia, southern Pennsylvania, and numerous apple-producing districts within the State of Maryland. Besides the standard varieties of these sections there are variable receipts of Baldwin and Rhode Island Greening and other northern varieties from New York and Pennsylvania.

Most barreled apples are sold from the railroad platform at Bolton Station. Some few cars change hands among the larger receivers, usually at a profit of 15 to 25 cents per barrel, if it is bought stock. Only one firm specializes in barreled apples.

BOSTON

The earliest apples of commercial importance in the Boston market comes from New Jersey, Delaware, and Maryland in baskets and hampers and are followed a little later by New York and Michigan stock. After the early shipments, come near-by apples in open bushel boxes. Among the first barreled stock on this market is Gravenstein, closely followed by Wealthy and Wolf River from Maine and New Hampshire. At this time a few cars of Potomac Valley Jonathans usually arrive. McIntosh, the favorite second-early apple, usually appears early in October, and moves chiefly during October and early November. Only one barreled winter variety, Baldwin, is sold in large quantities in Boston. Massachusetts, Maine, New Hampshire, and New York supply the Baldwin

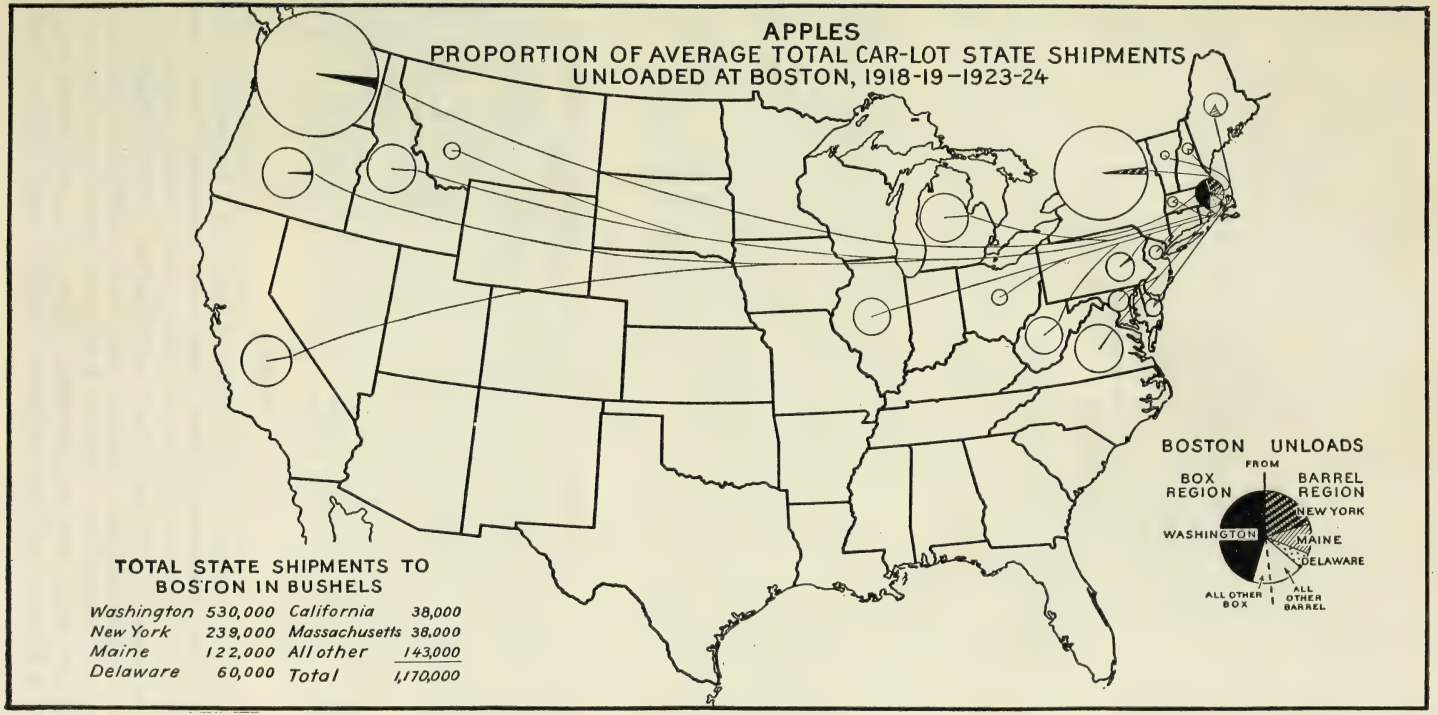

FIG. 20.—Boston is the principal market for Maine apples. Early apples from Delaware are well represented

demand. Rhode Island Greening and Northern Spy receive considerable attention. Ben Davis and Roxbury Russet are of some importance late in the season. Maine supplies much of the barreled stock on this market and a very large portion arrives by boat. Western boxed apples average nearly half the number of bushels unloaded from car lots at Boston. Principal sources and seasonal movement of Boston's car-lot supply are shown in Figure 20.

The wholesale market located in the Faneuil Hall district is about half way between the principal railway freight terminals and is near the water front. The distance from the railway freight terminals necessitates much trucking. Apples are hauled from the car at any time, and the load is backed up in front of the receiver's store and left there for sale. In case the load is not sold after several hours the apples are unloaded and placed in the wholesaler's store or on the sidewalk to be jobbed out.

When the barreled-apple market is very dull new arrivals are placed in cold storage to be taken out later and sold. Storage facilities are usually adequate and in years of large harvest the cold-storage houses receive large quantities of barreled apples. Some of these are exported.

Though situated relatively near New York, the Boston market is not always influenced by the frequent fluctuations of the larger city. There is limited though fairly steady demand for barreled apples, the merchants buying chiefly to supply their own needs. During seasons of large New England crops much of this stock is handled on consignment. In such seasons prices are likely to rule lower than in other great eastern markets, but during seasons of heavy production in New York State when the New England crop is short and poor, the conditions may be reversed and large quantities of New York apples may be sold or consigned on this market.

WASHINGTON

The barreled shipments to Washington market are mainly from Virginia and include York Imperial, Grimes Golden, Winesap, Stayman Winesap, Ben Davis, and Yellow Newtown. Whenever the southern crop is short, many Baldwins and Rhode Island Greenings in barrels and baskets arrive from western New York. The early apples are trucked from the farms in the vicinity, and many truck loads of later apples come from the Potomac and Cumberland apple sections. About two out of five of the car lots are from the Northwest. The principal wholesale market district of Washington is centrally located, but the apples received by rail must be hauled 2 or 3 miles from the freight yards.

NORFOLK

The produce market in Norfolk is located principally within a block of the junction of Water Street and Roanoke Avenue or the Roanoke Dock. Several firms buy and place in cold storage, but the more common practice is to carry supplies for only a relatively short period. Shipments from distant producing sections commonly are purchased through local brokers, but for supplies from Virginia and nearby producing sections the deal is usually made direct with the grower or shipper and the apples are resold in small lots to retailers.

Many of the early apples marketed in Norfolk are grown in the vicinity of Crozet and Staunton, Va.

There are few orchards in the immediate vicinity of Norfolk, so that almost all of the supplies are brought in by boat on the rivers and canals that form a network over Tidewater Virginia or they are shipped in by railroads.

Among the summer and fall varieties, Yellow Transparent, Early Harvest, and Grimes Golden predominate. York Imperial is marketed in large quantities during its season and the Ben Davis has a steady movement throughout the winter and spring for cooking purposes. Winesap and Yellow Newtown are the best and most active late-selling stock.

PITTSBURGH

Pittsburgh draws largely on New York State for barreled apples (fig. 21), Pennsylvania, West Virginia, Virginia, and Delaware, ranking far lower as sources of supply. Much of the Pennsylvania and West Virginia stock arrives in bulk. Dealers claim that a more acceptable class of barreled stock can be obtained in New York and the shipping facilities favor prompt delivery.

Not many apples are raised in the vicinity of Pittsburgh and such stock is generally of ordinary quality selling usually much lower than the shipped-in product. A few growers raise apples of good quality and deliver to the market in trucks.

The principal winter varieties are Baldwin, Tompkins King, Northern Spy, York Imperial, Ben Davis, and Roxbury Russet. Baldwin and Tompkins King are the most ready sellers, Tompkins King usually bringing a slight premium over Baldwin. The Ben Davis meets fairly good demand from a class of trade desiring a cheaper apple. About one-fifth of the car-lot supply is of boxed apples, chiefly from Washington.

As shipments are received continually, a relatively small quantity is put into storage in the fall. Dealers buy or sell from the cars or from the receiver's store.

CINCINNATI

Practically all Cincinnati's receipts of apples in barrels and bushel baskets are delivered to the railroad yard on Plum Street. This yard is centrally located between the two streets upon which the majority of commission houses are situated. The buyers in general gather at this yard and the stock is sold from the cars.

Cincinnati affords a good market for apples for local consumption, and it is a distributing point for stock to smaller towns located within 100 to 150 miles. The supplies are generally regular, and extreme price fluctuations seldom occur. The local trade demand fancy stock, but stock of the red varieties showing high color may be of a slightly lower grade and still command a good price.

Over half of the barreled stock consumed in Cincinnati is purchased in New York State, about one-eighth more comes from Michigan and practically all of the remainder comes from Virginia, Maine Ohio, West Virginia, and Illinois. The few apples brought from near-by points in Ohio are chiefly from around Gallipolis. The earliest varieties are received from Georgia and Illinois around the latter part of June. Yellow Transparent is the first good commercial variety, followed generally in the order named by Early Harvest,

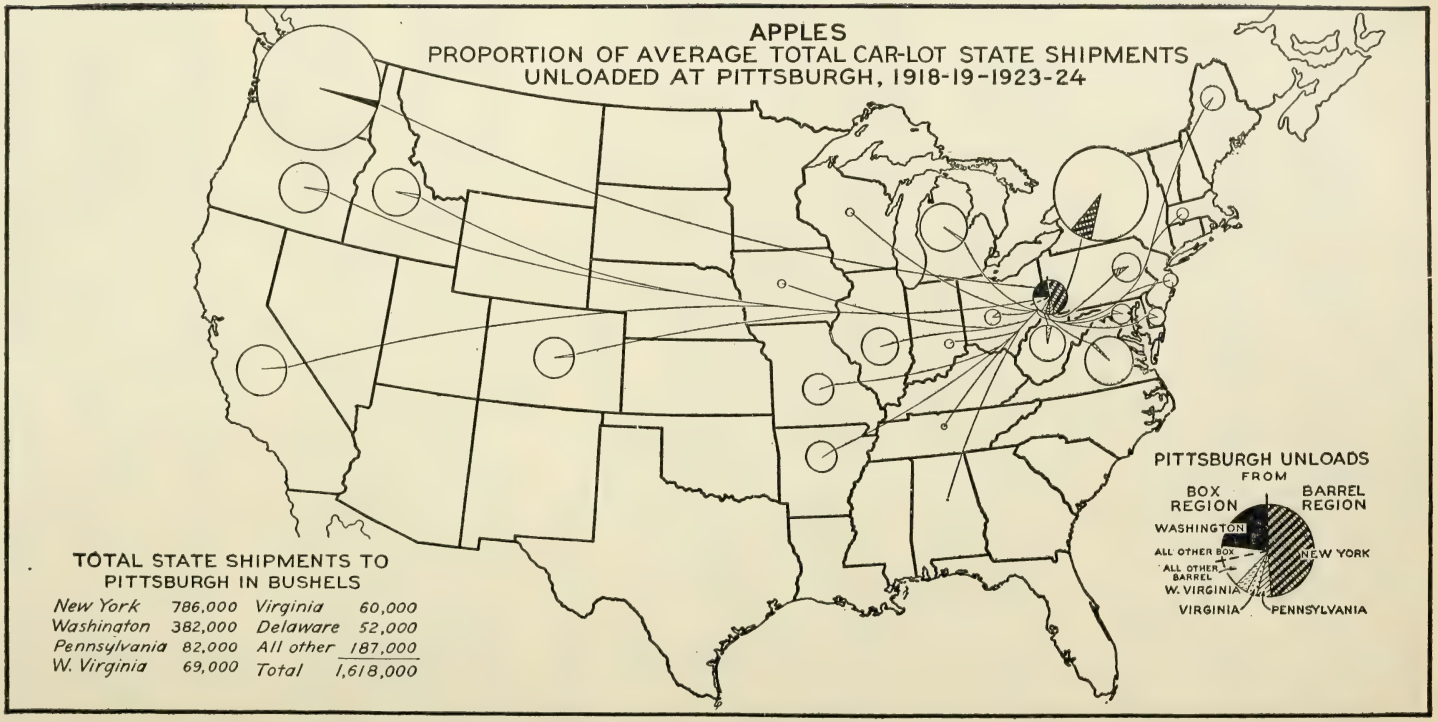

FIG. 21.—About one-half the total supply of apples unloaded in Pittsburgh comes from New York

Oldenburg, Maiden Blush, and others. These are succeeded by the standard fall and winter varieties including Baldwin, Northwestern Greening, Northern Spy, Twenty Ounce, Jonathan, Rome Beauty, York Imperial, Ben Davis, and Gano. Supplies of boxed apples, equivalent to over one-third of the total receipts, are mostly from Washington and Idaho.

CLEVELAND

Cleveland is largely a barreled-apple market, although western boxed apples from Washington and Idaho constitute fully one-third of the supplies received in car lots. A considerable quantity of apples is produced within a radius of 40 or 50 miles of the city. These are mostly Baldwins. Other varieties given in the order of their importance are Rhode Island Greening, Ben Davis, Jonathan, and Yellow Transparent. Most of the apples grown in the near-by districts of course find their way to the Cleveland market, generally coming in by motor truck or over the various interurban lines. Ohio apples are generally well cared for and because of their short distance from market usually arrive in good condition.

The Virginia York Imperial is popular during the early winter months. These apples are mostly bought f. o. b. from dealers at shipping points, as the grade and pack are usually dependable. After the York Imperial season, the supply of barreled stock comes largely from New York State, which forwards over three-fifths of the barreled apples that are unloaded at Cleveland.

The early summer and fall apples are mostly disposed of through the farmers' curb market or through the commission merchants, but many of the large orchardists sell their winter apples outright to local dealers, either barreled ready for shipment, or on the tree, in which case the buyer does the picking and packing. All produce must be trucked from one-half mile to 2 miles, as none of the produce firms have their own sidings.

CHICAGO

The new location of the Chicago produce market is at Ashland Avenue and Twenty-second Street, about 3 miles from the old South Water Street Market. The new market area has wide streets, direct railroad connections, and various conveniences for handling produce efficiently. Receivers buy mostly from growers or country dealers and sell to jobbers or sell direct to retailers. A local estimate of the volume of commission sales is 15 per cent of the total.

The principal States of the barrel region that ship winter apples to Chicago are Michigan, Illinois, New York, and Missouri. (Fig. 22.) Leading varieties named in order of importance are Baldwin, Rhode Island Greening, Northern Spy, Tompkins King, Ben Davis, and Golden Russet from New York State; Baldwin, Rhode Island Greening, Northern Spy, and Jonathan from Michigan; Jonathan, Ben Davis, Winesap, Gano, and Willowtwig from Illinois, and Rome Beauty from Ohio. Occasionally New England Baldwins are shipped to Chicago. A large percentage of the apple supply as in other large northern markets, is received in October and early in November and placed in storage to be taken out as desired. The usual order is to market the Jonathan, Tompkins King, and Northern Spy first, then Baldwin and Rhode Island Greening, and last the Ben Davis, Gano, and Willowtwig. Baldwins and Rhode Island Greenings are

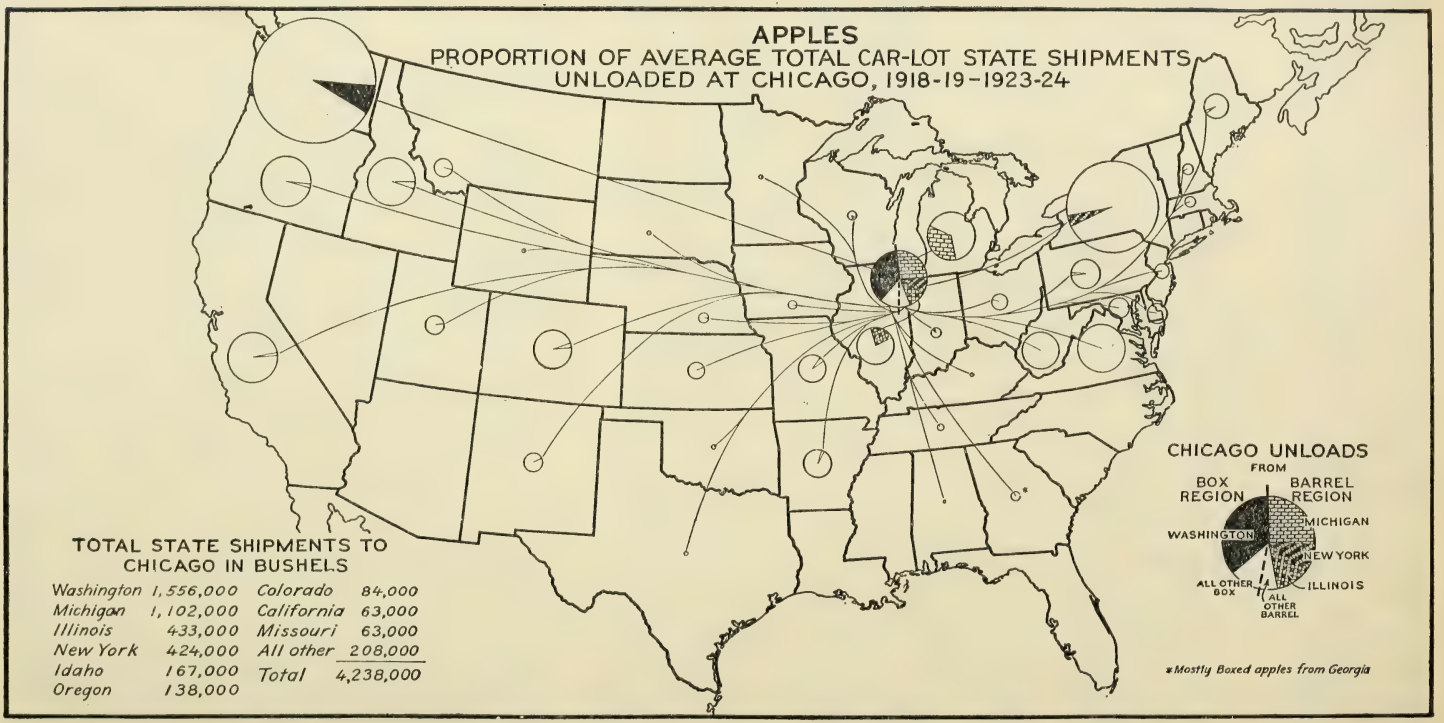

FIG. 22.—Michigan supplies nearly one-half of the barreled apples unloaded in Chicago

started about as early as the first-named varieties but are continued longer into the spring.

In seasons of heavy crops, barreled stock is shipped in liberal quantities throughout the season and there may be numerous cars on track in late winter and early spring. In the season's apple supply all the leading boxed-apple varieties and sections are represented.

ST. LOUIS

Under normal conditions about 60 per cent of the apple supply of St. Louis is packed in barrels. Approximately three-fourths of the barreled stock is received from Calhoun County, Ill., and because they are transported by boat for the comparatively short distance the freight charges add little to the final cost.

Unloading points in St. Louis are scattered and distant from the market place and storage facilities are not conveniently located. This renders much handling necessary.

The boat receipts are unloaded on the levee along the river, and it is no unusual sight to see from 10,000 to 20,000 barrels stacked upon the levee at one time. Here the receivers gather in the afternoons and sell the stock. If not sold promptly the fruit may stand two or three days in the hot sun, which very materially affects the quality of the apples.

From the levee the stock is hauled to the store or to the cold-storage plant, and in many cases it is reloaded into cars and shipped to other markets.

The main fall varieties from Illinois and some from Missouri are Jonathan and Grimes Golden. The later varieties, such as Ben Davis, Gano, Winesap, and Willowtwig, are placed in common or cold storage and sold on the market during the winter months.

New York State ships most of the remaining supply of eastern apples. During early winter a large proportion of these receipts arrive in bulk. This bulk stock is usually sold by the barrel measure, although some is sold per 100 pounds. Receipts of eastern apples include Rhode Island Greening, Northwestern Greening, Baldwin, and some York Imperial.

MILWAUKEE

Demand for the better grades of apples is brisk in Milwaukee throughout the year, especially for the red varieties. The wholesale market is conveniently located about half way between the principal railway freight terminals and adjacent to the larger docks.

Although fairly near Chicago, the market is not controlled by fluctuations in Chicago prices. There is a steady local demand, as the merchants buy only to supply the requirements of their regular trade.

The first early receipts, about July 1, are from Illinois and Missouri. Michigan boat shipments follow, principally of Early Harvest, Yellow Transparent, Benoni, Red Astrachan, Oldenburg, Alexander, Fameuse, and Maiden Blush. Fall and winter apples from midwestern, southern, and eastern States include the Jonathan, Grimes Golden, Fall Pippin, Winesap, Ben Davis, Gano, Tompkins King, Rhode Island Greening, Northern Spy, Baldwin, and Yellow Newtown. About one-half the car lots are from the barrel region. The local merchants begin placing western and northwestern fall and winter

varieties in cold storage as soon as stock has reached the proper stage of maturity.

MINNEAPOLIS AND ST. PAUL

The car-lot apple supply of Minneapolis is in some seasons very evenly divided between boxed fruit, of which nine-tenths is from Washington, and shipments from the barrel region, mainly from New York, Missouri, Illinois, Michigan, and Kansas. The apple crop of the vicinity is not important except for a brief period in the fall. Oldenburg and Wealthy are the leading early varieties. Sources of shipment to St. Paul are practically identical with those of Minneapolis, but the proportion from the box region is larger—about two-thirds of the total.

Both Minneapolis and St. Paul are fairly well supplied with cold-storage facilities; consequently there is a tendency to buy a large share of the winter supply in the fall, but apples of the standard eastern and western varieties are received all winter. The apples are bought on f. o. b. basis through representatives in the producing sections or through local brokers. There is very little apple jobbing in the cities. The apples are usually bought in car lots and sold direct in small lots to the retailers. Minneapolis and St. Paul supply small districts in Minnesota, North Dakota, South Dakota, and parts of Wisconsin and Michigan. This trade is supplied in small lots by freight service with heating facilities.

GENERAL MARKET PREFERENCES

Red varieties sell more easily and at higher prices than green or yellow kinds. The exceptions are in markets long accustomed to local green or yellow apples of high quality, therefore having no prejudice against such colors. Baltimore and Washington readily buy the Grimes Golden, Yellow Newtown, Rhode Island Greening, and Northwestern Greening, but farther south in the Gulf States and Texas the yellow kinds are somewhat neglected in the markets. New York is a fairly good market for yellow apples and one of the best for the Rhode Island Greening, which sometimes sells higher than the Baldwin. Philadelphia likes the Greening but is in general a red-apple market. Boston pays more for red kinds except possibly the very early Yellow Transparent and Gravenstein, which has much red coloring. Yellow and green apples usually sell lower than red kinds of corresponding quality in St. Louis, Minneapolis, and Milwaukee. Chicago and the city markets of Ohio and Indiana record no prejudice against yellow apples.

VARIETY AND PRICE

Taking the price of Baldwin, the leading barreled variety, as a standard, it may be said of other prominent kinds that Northern Spy, Jonathan, McIntosh, Tompkins King, Winesap, Esopus Spitzenburg, and in some markets Yellow Newtown, Winter Banana, Grimes Golden, and Delicious under usual market conditions sell about 25 per cent higher than the Baldwin. Rome Beauty and Stayman Winesap sell about the same as the Baldwin. Stark, York Imperial, Rhode Island Greening, and many of the yellow kinds sell generally 5 to 20 per cent lower. Ben Davis, Gano, and most russet kinds sell 15 to 50 per cent lower, and all varieties little known in the market

where offered sell at irregular prices. Details of the characteristics of leading varieties of barreled apples are shown in Table 16, p. 91.

Most markets report increasing quantities of apples packed in bushel baskets. Some receivers ask shippers to use this pack. Basket apples in general have a lower market standing than the barrel pack, perhaps because many early apples, windfalls, and drops are put up in baskets, whereas the finest stock intended for cold storage mostly goes into barrels. Actual prices often range 20 to 25 per cent lower than the same quality packed in barrels. Dealers say there is little difference, however, if the basket stock is well selected, carefully handled, and shipped only short distances. A great deal of first-class fruit of the late crop goes into basket pack, including millions of baskets good enough for cold storage. Basket stock from storage is popular in the spring market because in warm weather a package smaller than the barrel is more convenient for retailers.

MARKET STANDING OF VARIETIES

If high red color is added to good culinary and dessert qualities, the variety should be a market success provided it can be supplied at moderate cost. Since many of the choice varieties are costly to put on the market because of some fault in tree or fruit, the leaders are mainly the varieties of passable quality which can be grown and marketed at relatively low cost per busuel. Cooking quality counts for more with barreled stock than with boxed apples. The two leaders, Baldwin and, in the Middle West, Ben Davis, are sold mainly for cooking. Many important varieties like York Imperial, Rhode Island Greening, Oldenburg and Wealthy and even such showy, high-flavored apples as Northern Spy and Tompkins King are much in demand for cooking. A few choice kinds, including Winesap, Stayman Winesap, Jonathan, Esopus Spitzenburg, Yellow Newtown, Delicious, and Rome Beauty are well-known and fairly important in the barrel class, but are more prominent in the box pack.

Grouped with reference to season, standard late varieties are the leading class grown in western New York, northern New England, Virginia, West Virginia, Michigan, Ohio, Arkansas, and Missouri, and the greater part of the Middle West. Regions specializing somewhat on early summer and fall varieties are eastern New York, southern New England, New Jersey, Delaware, North Carolina, Georgia, Tennessee, and southern Illinois. Because of the short growing season, the fall varieties are prominent in the extreme northern sections of the apple belt, including Wisconsin, Minnesota, northern New England, and some of the apple districts of Canada, but strictly the early apple sections are those where the crop matures in time for the summer and early fall markets. Production of this class tends to center in regions near the great cities, because quick transportation to market is necessary in warm weather for this perishable fruit.

The summer and fall varieties are usually classed as the early crop. They constitute most of the shipments before October and consist mainly of such kinds as Yellow Transparent, Red Astrachan, Williams, Oldenburg, Gravenstein, and Wealthy. They begin from Tennessee, Kentucky, southern Illinois, and Georgia, but form a part of the of the shipments from all apple regions ending with Oldenburg,

Wealthy, etc., from the Great Lakes region. The great cities of the Northeast are supplied in summer mainly from Delaware, New Jersey, and the Hudson Valley. Important early shipping counties are Monmouth and Burlington in New Jersey, Kent and Sussex in Delaware, Columbia and Dutchess in eastern New York. Many fall apples are shipped from New York, Michigan, and New England. Midwestern markets are supplied early from Kentucky and Tennessee, but heaviest summer receipts are from southern Illinois, comprising Yellow Transparent, Oldenburg, and other kinds less generally known. Early production of New York, Delaware, and the South is 500 to 1,000 carloads for each of the three sections.

MARKET QUALITIES

BALDWIN

The greatest general utility apple is the Baldwin, excelling in no one quality but good for cooking, eating, storage, and display. Its large size, full red color, fairly high, sprightly flavor, uniform shape, first-class cooking quality, and comparative freedom from decay make it reasonably acceptable to all classes of buyers. It is on the market five to seven months and well known to most eastern consumers.

BEN DAVIS GROUP

The Ben Davis is distinctly a market variety. It regularly produces large crops at low cost. It looks, cooks, and handles well and keeps to the end of the season. In seasons of a full apple crop the varieties of the Ben Davis class are crowded hard by apples of better quality and it sells lower than other leading kinds. The Gano is much like the Ben Davis but is sometimes considered a little better in quality and sells a little higher most of the season.

DELICIOUS

Although still mainly a box variety, carloads of Delicious apples in barrels have appeared recently from half a dozen eastern and central States, some of these of excellent market quality and selling close to the top market price. This mild-flavored, soft-fleshed apple is a good keeper in cold storage. Its distinctive shape and style enable consumers to recognize and call for it. Delicious enters the market in October and is one of the few first-class dessert apples on sale until late in the season. Reports of its commercial adaptability in the barrel region vary considerably. It has been planted extensively in Virginia and Illinois. The Golden Delicious is similar to the red variety, but its market position is not yet fully established.

GRAVENSTEIN

An apple of fine flavor and excellent quality is the Gravenstein. It ripens while the weather is still warm and is a poor keeper. It often lacks uniformity of size, shape, and color. Some barreled Gravensteins from Nova Scotia invade eastern markets. Others are from New Jersey, New England, and Michigan.

GRIMES GOLDEN

Of excellent, mild, pleasant flavor the Grimes Golden is handicapped both for eating and cooking trade by its yellow color and small size except in a few markets where it is thoroughly known by consumers. It is a fall and early winter kind and tends to lose in flavor and texture late in the season and often shows scald in cold storage.

JONATHAN

There are still some Jonathan orchards in New York, Pennsylvania, and West Virginia, but the strongholds of the variety in the barrel region are Missouri, Arkansas, and Illinois. Midwestern Jonathans often top the prices in cities of that region. It is a general-purpose variety, with emphasis on dessert rather than on cooking. Its market weakness is the rather small size and variable keeping quality. Its good eating and shipping characteristics make it a prime favorite in early winter.

MAIDEN BLUSH

Highly variable color and appearance are characteristic of the Maiden Blush. Poor handling and keeping qualities are also handicaps in successful marketing. It averages about the same price level as other standard fall varieties and just about maintains its limited position in the market.

M'INTOSH

One of the varieties which takes a high finish in the eastern climate, the McIntosh, often tops the market in the early season. It comes mainly from New York and New England and from Michigan and Wisconsin. Its worst market defect is rapid loss of quality in storage and its main market season is about over by Christmas.

NORTHERN SPY

High flavor and sprightly, aromatic, juicy quality, with large size and attractive, light red mixed color gives the Northern Spy a high rank in the market, at least for fruit from the best orchards. When poorly grown or in unfavorable seasons the quality and appearance are irregular. It is salable a little before the Baldwin but is mostly off the market earlier because an uneven keeper and therefore not very well adapted for long-time commercial storage. It is one of the best sellers and, although more difficult to raise than some kinds, should be able to hold its place in the fancy trade.

NORTHWESTERN GREENING

This variety looks well when it has attained full color in storage, but it is not equal to the Rhode Island Greening in quality. Sometimes it sells at high prices early in the season when shipments arrive from Virginia and Maryland. A few shipments of Northwestern Greening originate in New York and Wisconsin.

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OLDENBURG

The most widely grown medium-early kind, the Oldenburg or Duchess is a general market favorite as cooking stock. Throughout the fall months its red color is attractive. The basket and barrel stock is chiefly from New York, Michigan, New Jersey, and Delaware. Its worst defect, aside from the rather acid flavor, is the tendency to small sizes as the trees grow old or suffer neglect.

RED CANADA

Red Canada, sometimes called Steele's Red, possesses a high dessert quality and is popular in midwestern markets, selling at high prices from February to the end of the season, but the difficulty and expense of production are handicaps.

RED JUNE

Chiefly because of its deep, red color the Red June sells higher than most early apples. It is grown in New Jersey and Illinois to a limited extent and in numerous southern apple districts.

RHODE ISLAND GREENING

Among green or near-green varieties, the Rhode Island Greening takes the lead. It ranks with the Baldwin in general utility but its season begins and ends a little earlier. It can be used in late fall, and shipments at that time include much bulk and basket stock, but its main season is from October to March. It is one of the most popular cooking apples. Demand is more constant than the supply and at times Rhode Island Greening sells higher than Baldwin, but it usually sells lower and it sells considerably lower in markets that are prejudiced against green varieties. It is subject to scald in storage. Most shipments are from New York and Michigan.

ROME BEAUTY

Rome Beauty ranks with Baldwin, York Imperial, Ben Davis, and Rhode Island Greening in general utility qualities and sells at about the same price as the Baldwin in markets where it is well known. It is of large size, even appearance, and packs well, is a long keeper in storage despite a tendency to scald, not high flavored but good for baking and acceptable to the general trade. It is popular among growers in Ohio, Michigan, and in parts of the southeastern apple districts.

ESOPUS SPITZENBURG

Although still shipped from New York and Michigan, Esopus Spitzenburg has largely passed over to the box class. It is very popular from October to February because of its high flavor and color, but loses quality later in the season. It is considered hard to grow at a profit in the East because of orchard defects.

STARR

An attractive, yellow, cooking apple, grown chiefly in New Jersey, is the Starr, which reaches the market in early summer.

STAYMAN WINESAP

Stayman Winesap, younger relative of the old Winesap, is entering the front rank of market varieties. Dessert quality is better than with many other utility kinds. It keeps late, although with considerable waste in storage because of scald, watercore, and decay. Color is not equal to that of the Winesap and it does not keep in storage so well as that variety. Growers claim it can be raised at less cost than the Winesap and its popularity is increasing in producing sections as well as in the markets.

TOLMAN SWEET

One of the best selling sweet varieties is the Tolman Sweet, but demand is light for the whole class of sweet apples.

TWENTY OUNCE

The Twenty Ounce is one of the standard, short-season, fall and early winter kinds. Color is green or yellowish with red stripes, but color and size are variable. Prices average well for its class and Twenty Ounce is a good keeper and shipper for its season. It is grown for market chiefly in New York and Michigan.

WEALTHY

One of the leading fall kinds, medium in size and of high color, is the Wealthy. Demand is chiefly for cooking, as the flavor is ordinary. The main market season is from October to December. The price averages about the same as for the Oldenburg and generally lower than for the Baldwin.

WILLOWTWIG

Willowtwig is one of the long-keeping, low-quality apples that have been losing importance with the increase of cold storage. It is raised in the Middle West and in that region often brings good prices late in the season.

WINTER BANANA

Although best known in the western box pack, the Winter Banana has been shipped in baskets and barrels from Michigan, New York, Virginia, Pennsylvania, and Illinois. Color and finish of eastern stock are highly variable. At its best this apple is very attractive with its glossy finish and bright yellow and pink coloring. In flavor and keeping quality it is ordinary.

WINESAP

The favorite late-keeping Winesap apple is close to the leadership among commercial varieties on account of its great prominence in the rapidly growing box-apple section as well as in the Missouri Valley and the southeastern apple States. It lacks highest dessert or cooking uality but is very good in these respects and is especially attractive in the late season because of the rich, dark-red coloring. Prices top the general market after February. It is the only kind that ranks near the head in volume of shipments of boxed apples as well as in the barreled trade. As grown in some eastern sections, it runs irregularly and inclines to small size.

YATES

A smallish, long-keeping, good-shipping, but low-flavored, red variety is the Yates, grown at the southern end of the apple belt and seen only in southern markets.

YELLOW NEWTOWN

The best-known, high-grade, yellow kind is the Yellow Newtown. Production in the East is mainly in two or three counties of the Piedmont section of Virginia where it is known as Albemarle Pippin. The Newtown formerly led the export market, but in recent seasons it has sold about on a level with the high-grade red varieties. It is popular in some domestic markets and competes with Winesap in spring and summer, as it is a very late keeper and excels that variety in eating and cooking qualities.

YORK IMPERIAL

The "Baldwin of the middle South," the York Imperial has gained some favor farther west, but production centers in the Shenandoah and Cumberland sections. It reaches the great city markets a little earlier than the Baldwin and sells at about the same price, although not quite so popular for cooking or for storage. A tendency to scald in storage is considered one of its most serious market defects.

VARIETIES CHANGING POSITION

Some varieties are popular in the market but have been losing favor in the producing regions because of some orchard fault which makes the variety difficult to produce or handle with profit. These include Jonathan, Esopus Spitzenburg, Gravenstein, Tompkins King, Yellow Bellflower, Hubbardston, and Red Astrachan. Some kinds, like Roxbury Russet, Willowtwig, and Missouri Pippin, valued chiefly as long keepers, are in little demand because cold storage now keeps the better varieties in the market. Large, coarse apples, having little flavor or cooking quality are harder than ever to sell with the increasing use of the box pack. Varieties like Alexander, Bietigheimer, Wolf River, Bismarck, Fallawater, Cabashea, and Blue Pearmain have defects of quality and even of color, which make them poor sellers.

A few comparatively new or little-known kinds are gaining in market prominence, including the productive, high-grade, and general utility Stayman Winesap; the new dessert apple, Delicious; the attractive, high-flavored McIntosh; the medium-early, productive, utility apples, Wealthy and Oldenburg; and the early and attractive Starr, Yellow Transparent, and Williams.

FOREIGN APPLE TRADE

Apple exports have averaged only about 5 to 10 per cent of the commercial crop, yet the export situation has had much to do with the course of the general apple market. The sudden change in market conditions and the rise in price, on the resumption of apple exports after the World War is an example still fresh in memory. The export movement is a useful safety valve in years of heavy production. Imports form hardly more than 5 per cent of the foreign apple trade and because of their small volume have little effect on the general market.

EXTENT

Apple exports averaged a little over 2,000,000 barrels per season from 1918–19 to 1923–24. The figures include boxes reckoned as one-third of a barrel. Average exports of boxed apples became about equal to those in barrels from 1920 to 1923. The 1923–24 combined movement of over 4,000,000 barrels was the result of heavy market pressure in the United States and extreme shortage in Europe. These conditions prevailed to some degree in 1924–25 and 1925–26, with repeated heavy export movement. Greatest exports usually have occurred in the years of even dates in line with the heavy alternate

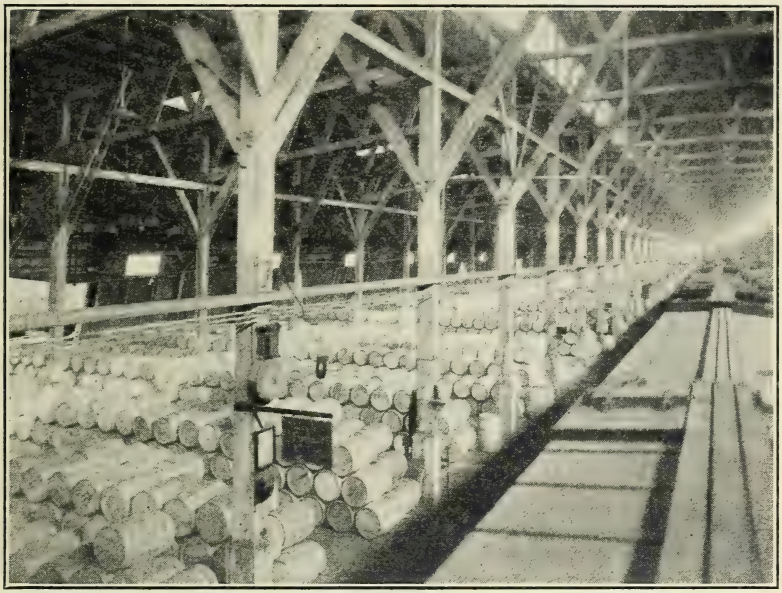

FIG. 23.—Temporary storage of barreled apples at docks, awaiting export

crops in the Eastern States. But the increasing production of the boxed-apple section and the greater acreage of varieties that bear heavy annual crops tend to provide a large export surplus every season. Some idea of the scale of export operations may be had from Figure 23 which shows temporary storage at docks of barreled apples for export.

MARKETS

Three-fourths of the average apple exports go to the United Kingdom, including over four-fifths of the barreled apples exported. The remainder are taken chiefly by Canada, by the Scandinavian countries and Germany, and by Mexico, Cuba, Argentina, and Brazil. Recent gains in exports to continental Europe are principally of the boxed fruit.

SEASON

The bulk of the apple export movement is from September to the end of April. Shipments are irregular; the peak of the season tends to occur in November and December but may happen any month from October to February. The heaviest month of all during the

six seasons 1918–19 to 1923–24 was in October of 1923, with the equivalent of 948,301 barrels, or nearly a quarter of the season's total.

FORECASTING THE EXPORT SEASON

Reports of prices obtained by the earliest shipments of American apples are some indication whether the foreign markets are clear of desirable stock from competing sources and suggest the general strength or weakness of the demand. However, high early prices often bring excessive supplies, and even with previous knowledge of conditions there is always a considerable degree of risk in consigning to a market so far away with no possibility of diverting the shipment if the outlook changes meanwhile. Prices may slump quickly from very high levels to figures lower than the level of the domestic market. Even the best-informed shippers must rely somewhat on good fortune and the averaging of returns for sales.

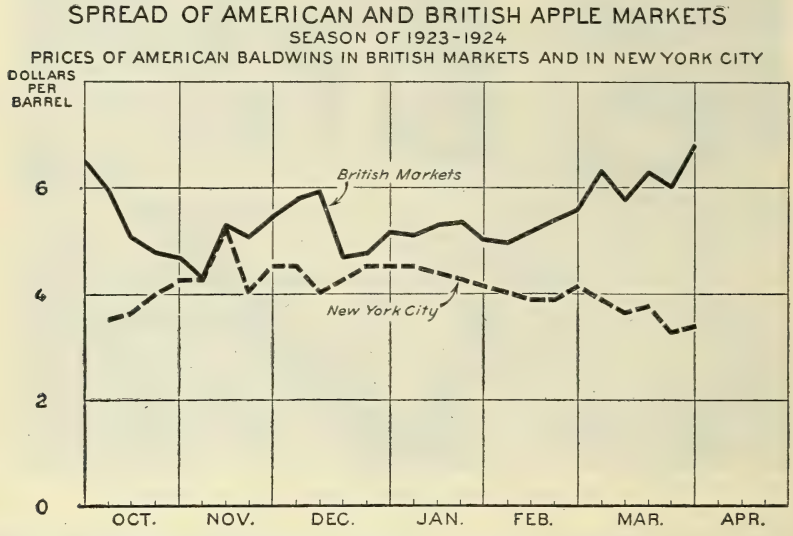

FIG. 24.—Prices in British markets often start rather high and soon decline, but frequently recover during the holiday period and again late in the season, when supplies are decreasing

Conditions which indicate a good outlook are (1) light or low-grade crops of apples in the United Kingdom and the Continent of Europe, (2) an early clean-up of home-grown supplies, (3) prosperous conditions of industry in the United Kingdom, and (4) only moderate supply of apples suitable for export from the United States and Canada.

British markets are often good in the opening weeks of the season in September and again in the weeks preceding the year-end holiday season. They sometimes have another period of strength toward the end of the season when there is comparatively little stock firm enough for export shipment. Shippers of long experience find their best judgment needed to time arrivals correctly and to avoid the worst periods of oversupply. Australian apples follow very shortly and care must be taken to watch the first Australian and New Zealand arrivals.

Price trend throughout a typical season, 1923–24, is shown by Figure 24, in which prices of a standard variety of American apples

in British markets and in New York City are charted by months. More detailed information on prices of American apples in British markets is given in Table 23, p. 98.

ESSENTIALS OF TRADE

Success in exporting apples requires (1) reliable trade connections, (2) efficient sales supervision, (3) proper credit arrangements, (4) a familiarity with domestic and foreign trade facilities, and (5) a knowledge of conditions under which perishable products are shipped and an understanding of the selling of fruit in foreign markets. Therefore producers as a class and most dealers leave the actual exporting to specialists who buy the fruit or take it on consignment and attend to credit arrangements, insurance, brokerage, commission, port charges, wharfage, storage, and refrigeration, and who supervise other details which enter into a completed transaction.

The usual course of a grower or association is either to sell to a traveling agent of an exporter or to ship to an exporter on commission. In either case the shipper receives directions how the apples should be graded and packed, branded, loaded, and shipped to meet the exporter's requirements.

Direct sales to exporters are much like sales to other dealers. The exporter obtains the fruit if he makes the best offer available and he assumes all of the detail work incidental to foreign marketing.

Unless the demand is unusually brisk, exports are likely to be made on a commission basis. If the grower, dealer, or association wishes to ship on commission, it will be necessary to know something of the conditions and outlook in foreign markets, obtaining information from departmental and consular reports of the United States and Canada, also from news dispatches and from reports supplied by export commission houses.

EXPORT PRACTICES

New York is the principal export district for barreled apples. Shippers billing cars through for export make such notation on their bills of lading and have the railroad notify their New York agent when the cars arrive. It is the duty of the agent to see that the shipments are inspected, if the shipper desires it, and to see that they are delivered to the next ship sailing. Usually these agents are brokers representing the foreign firms which are to receive the shipments, and they are paid by the foreign receivers from the commissions or profits. In some cases, however, a shipper designates a forwarding concern to look after the necessary duties connected with exporting.

Barreled apples billed through for export from New York, are delivered either at Sixtieth Street, New York City, or at Hoboken, Jersey City, and Weehawken, N. J., where the cars are unloaded. The barrels are conveyed on barges to the steamer dock, although some are loaded direct from cars to ship. Not all shipments designated for export on their original bills of lading are actually exported. Inspection sometimes shows that they are not in good enough condition for a long journey, and in such cases they are ordered delivered to one of the docks on which apples are sold, or hauled to some dealer's store to be sold "on the street." Likewise, some shipments

of apples are exported which have not been billed specifically for that purpose. In such cases the apples are merely lightered from the down-town railroad docks to the dock of the steamship line which is to carry them. Loading of barrels for export is shown in Figure 25.

Small or medium-sized apples are more popular for export than for domestic consumption, the 2¼-inch minimum size being preferred for shipping out, and the 2½-inch size being next in popularity. The eastern apples most commonly exported are Baldwin, Rhode Island Greening, Ben Davis, Gano, and Wealthy from New York, and York Imperial, Ben Davis, Winesap, and Yellow Newtown (Albemarle Pippin) from Virginia and West Virginia.

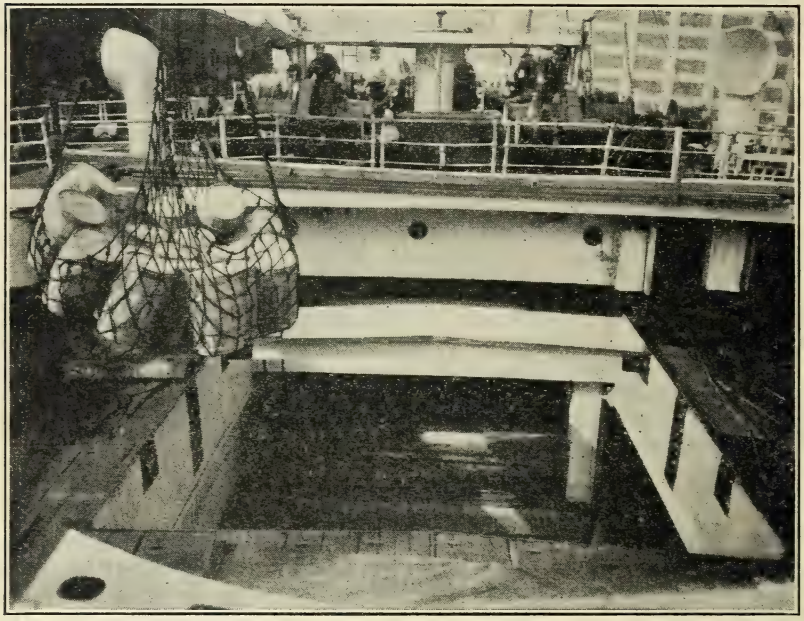

FIG. 25.—Loading apples for export

The shipping-point inspection certificate has its value in foreign countries as well as in domestic markets. Auction sales in British markets are made by sample and buyers have found that the Federal-State inspected apples can be relied upon to be of uniform quality and condition and that the samples can be depended upon to be indicative of quality and condition of the entire shipment.

Liverpool and Manchester apple auctions do not accept responsibility for quality. They are expected to stand back of the classification of the fruit as to condition. The buyer accordingly claims the right to reject barreled apples when packed too tight, too slack, or with the contents wet because of defective packing or overripeness, provided these conditions were not stated when the goods were sold. Boxed apples also may be returned for excessive number of defective apples in the package; but in reference to general quality, including size and color, the buyer must stand by his own judgment as obtained

from inspection of the sample. At the London auctions, however, the produce is sold by sample in every way and no matter what faults or defects are found after sale the buyer assumes full risk.

Activities at the well-known Liverpool apple auction as seen in 1924 are described as follows by an official observer:

Prior to the sale the samples are brought to the basement and lids are unfastened. A double alternating lift is used to take the samples up for display in the salesroom. In large lots two samples are shown. An attendant removes the head from one barrel and sways it to and fro so that all in the salesroom can see the pack. Simultaneously two other attendants, or porters, remove the head from the other barrel, and with a whirl and a flourish it is flung up on the edge of the well

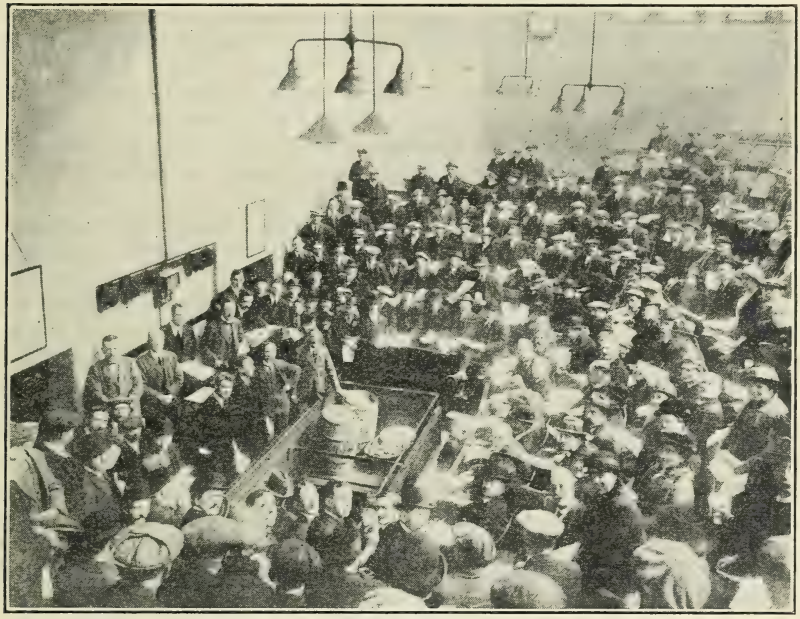

FIG. 26.—Apple auction, London, England

to the lift and its entire contents are cataracted out and down into a huge basket. The basket, which is very broad and shallow, is then placed on the lift and flood lights play over it so that the contents are in vivid display. The sale is completed, the empty barrel is jammed upon the basket of fruit and all disappears below as the attention of the buyers is drawn to the next lot.

Selling of fruit at auction in London, England, is shown in Figure 26.

The recent ocean rate on barreled apples from the Atlantic seaboard to the United Kingdom is 90 cents a barrel in ordinary stowage and $1.40 a barrel in refrigerated space. The railroad freight rate to New York from Martinsburg, W. Va., a representative early shipping point, was 33 cents per 100 pounds in 1924–25. Combined rail and ocean freight rate from Martinsburg, W. Va., to the United Kingdom was $1.42 a barrel, in ordinary stowage, and $1.90 a barrel when shipped in refrigerated space.

Evidently from $1 to $2 per barrel is to be deducted from the price in foreign markets to obtain a basis for comparison with the home market. After making due allowance for cost of marketing, the net return may be very low, possibly lower than in city markets of the United States. The price tabulation (Table 23, p. 98) shows the wide ranges and frequent shifts of the market. Part of the wide spread between high and low prices of same date is due to the customary inclusion of several grades, sizes, and conditions on a single quotation and part is due to the inclusion of small sizes not usually offered in the home markets.

COMPETING EXPORTS

With a commercial crop one-sixth that of the United States, Canada exports one-third as many apples. In several recent seasons the shipments from the United States to the United Kingdom were equaled or exceeded by those from Canada. Over four-fifths of the Canadian apple exports, including most of the barreled apples, go to the United Kingdom. Since the United States also ships a greater part of its barreled exports to the United Kingdom, with the season and varieties rather similar, competition is keen in British markets.

The Canadian western boxed-apple crop, although increasing rapidly, is at present equaled by any one of our leading boxed-apple States. Direct competition between the two countries in their respective home markets is of moderate extent. From 1918 to 1923 the United States shipped to Canada about 223,000 barrels a year, importing during the same period from Canada an average of about 150,000 barrels. Only a comparatively few thousand barrels of Canadian apples are shipped directly to other countries than the United Kingdom and the United States. It is evident that the market struggle between the fruits of the United States and Canada centers in the barreled-apple supply in the markets of the United Kingdom. Otherwise the leadership of the United States is essentially in its exports of boxed apples to the markets outside of the United Kingdom, and to its enterprise and energy in extending those markets.

SUMMARY

The barrel is the prevailing and typical apple package in the region east of Colorado, and this region is commonly known as the barreled-apple region.

Three leading States—New York, Michigan, and Virginia—produce nearly one-half the average commercial crop of the barrel region.

Leading commercial main-crop varieties of the barreled-apple region are Baldwin and Rhode Island Greening in the North, York Imperial and Winesap in the South, and Ben Davis and Jonathan in the West. Leading fall kinds are Oldenburg, Wealthy, and McIntosh.

Methods of cultivation, harvesting, and marketing are in general less highly specialized than in the box region.

The harvest season extends from June to November, with greatest activity during October. Apples are picked into baskets or bags and put up in the orchard or packing house, with the aid of more or less grading and handling equipment and machinery. An increasing share of the crop is sent immediately to cold storage. Boxes, barrels,

or crates are used for handling. Much of the early fruit is put up in bushel baskets, and much low-grade stock is shipped in bulk, but as a general rule the best fruit goes into standard barrels that hold slightly more than 3 bushels. Western-style boxes are used for a small but increasing portion of the eastern crop.

Principal quality grades are A and B, corresponding to No. 1 and No. 2; principal sizes are 2½ and 2¼ inches, and leading combined market class is A–2½.

About three-fifths of the eastern commercial crop is shipped in car lots. A car lot is reckoned as averaging 175 barrels. Both refrigerator and box cars are used for the main crop, usually without icing.

About two-fifths of the average commercial barrel crop is accounted for by local demand, small-lot shipments, and waste. Fruit not required for local market is sold through local buyers or agents, shipped to city dealers or handled through cooperative associations.

Cold storage, in most sections, has largely superseded common storage for long keeping of market apples. Sometimes over one-fourth of the commercial apple crop is reported in cold storage at the height of the season. Barreled apples comprise about half the average stock in cold storage.

Markets for barreled apples may be considered according to sources of supply as divided into three classes in which the leading sources are, respectively, eastern, southern, or midwestern. Out of 26 cities with aggregate records available only for 1923, New York State led in the following 10: Boston, Buffalo, Cincinnati, Cleveland, Indianapolis, Newark, New York, Philadelphia, Pittsburgh, and Providence; Michigan led in two—Chicago and Detroit; Illinois in four—Milwaukee, New Orleans, St. Louis, and St. Paul; Missouri in four—Kansas City, Memphis, Minneapolis, and Omaha; Virginia in two—Birmingham and Washington. The same general conditions prevailed for the six-year average in those markets reported for such a period, except that for the six-year period New York led Missouri in Minneapolis and Illinois in St. Paul.

The greater part of the supply handled in city markets is bought in car lots from country shippers direct or with the aid of a broker. Some years a large proportion is shipped for sale on commission, and most small-lot shipments come to market on that basis. Receivers sell in large lots to jobbers and jobbers sell in small lots to retailers. In small market centers receivers are also jobbers and sell mostly in small lots.

In some cities most sales are at the freight yard or dock, but in the majority of city markets the apples are hauled to the wholesale district and sold from the receivers' stores. According to local reports and estimates, the large cities draw 5 to 25 per cent of their supplies as home-grown stock from near-by producing sections.

The markets vary in preferences, but most of the prominent market varieties have red color, large size, and good general handling, keeping, and table qualities. Baldwin, Ben Davis, York Imperial, and Winesap are considered market leaders. Some markets take green or yellow kinds readily.

Of the fruits exported from the United States, apples rank first in point of value, with total exports as fresh fruit for the year ending June 30, 1924, of 2,032,000 barrels and 6,198,000 boxes, valued at over $23,000,000. The United Kingdom purchases about three-

fourths of our surplus apples, while the largest percentage of dried apples goes to the Netherlands, Germany, and Scandinavian countries.

Comparatively few growers and small shippers care to incur the risk and delay of exporting. The business is mostly in the hands of a few concerns with foreign connections. These receive fruit for export on commission or buy it through their agents from growers, associations, and dealers and sell most of the apples at auction. Exports require 4 to 12 per cent of the total commercial crop of the United States.

Market forecasts are based chiefly on crop reports with some allowance for variation in competing sections and varieties. Crop and market reports are issued by the United States Department of Agriculture and by various Federal and State offices in market centers and in producing regions.

A main advantage of the barrel region is its comparatively easy access to the great markets, and for this reason it should be able to hold its own. However, the increasing proportion of high-grade fruit in the market is gradually driving out apples not well-grown, well-sorted, and well-packed. Only the product of the well-managed commercial orchards in sections with some advantages of climate, soil, and location seems to have much chance to survive intense competition.

TABLE 1.—*Features of the barreled-apple region*

State	Average commercial production 1918 to 1923	Average shipments in car lots 1918 to 1923	Leading varieties	Leading shipping counties	Leading shipping stations	Principal markets	Shipping season
	1,000 barrels	*1,000 barrels*					
New York	4,821	3,995	Baldwin, Rhode Island Greening, Northern Spy.	Orleans, Niagara, Monroe, Wayne, Ontario, Columbia.	Hilton, Lockport, Albion, Barker.	New York, Pittsburgh, Philadelphia, Chicago, Cleveland.	July to June.
Michigan	1,790	1,024	Baldwin, Northern Spy, Oldenburg.	Van Buren, Oceana, Berrien, Allegan, Mason.	Fennville, Benton Harbor, Traverse City, Bangor, Coloma, Grand Rapids.	Chicago, Detroit, Cincinnati, Cleveland.	July to April.
Virginia	1,473	1,088	York Imperial, Winesap, Ben Davis, Yellow Newtown.	Frederick, Augusta, Albemarle, Nelson.	Winchester, Front Royal, Crozet, Staunton.	New York, Philadelphia, Pittsburgh, Cincinnati.	July to May.
Pennsylvania	1,021	376	York Imperial, Stayman Winesap, Ben Davis, Winesap.	Franklin, Adams, Cumberland, York.	Biglerville, Gettysburg, Quincy, Waynesboro.	Philadelphia, Pittsburgh, New York.	July to April.
Illinois	1,028	677	Ben Davis, Jonathan, early varieties.	Pike, Union, Marion, Richland, Greene.	Valley City, Alton, Cobden, Newton, Barry.	St. Louis, Chicago	June to July.
West Virginia	915	616	York Imperial, Stayman Winesap, Ben Davis, Winesap.	Berkeley, Jefferson, Hampshire, Morgan.	Martinsburg, Inwood, Charles Town, North Mountain, Tablers, Huntington.	New York, Pittsburgh, Philadelphia, Cleveland, Cincinnati.	July to May.
Missouri	800	367	Jonathan, Ben Davis, Gano	Lawrence, Greene, Webster	Marionville, Haseltine, Seymour.	Kansas City, Chicago, St. Louis, Minneapolis.	July to June.
Ohio	771	113	Rome Beauty, Baldwin, Ben Davis, Grimes Golden.	Washington, Columbiana, Callia.	Marietta, Gallipolis, New Waterford.	Pittsburgh, Cleveland, Cincinnati.	July to March.
Arkansas	543	435	Ben Davis, Jonathan, Gano	Benton, Washington	Springdale, Rogers, Bentonville, Lincoln.	Chicago,[1] Memphis, Kansas City, Dallas.	June to April.
Maine	417	257	Baldwin, Rhode Island Greening, McIntosh, Northern Spy.	Oxford, Androscoggin, Kennebec, Waldo, Penobscot.	Belfast, South Paris, Bates, Auburn, Livermore Falls, Monmouth.	Boston, New York, Cincinnati, Philadelphia, Chicago.	September to April.
Maryland	275	190	York Imperial, Stayman Winesap, Ben Davis, Winesap.	Washington	Hancock, Hagerstown	New York, Philadelphia, Pittsburgh.	June to April.

[1] These markets take only a small portion of the State's car-lot shipments, large quantities being supplied to cities of the South and Southwest from which figures are not available

TABLE 2.—*Features of representative city markets where barreled apples are sold*

City	Percentage of total carlot supplies [1] received from barreled-apple region, 1918–1923	Principal States shipping	Estimated percentage home-grown apples	Principal varieties sold in barrels	Varieties of barreled apples usually commanding a premium
Atlanta	[2] 55	Georgia, Pennsylvania, Virginia, West Virginia.	5 to 15, average about 10	Fall Pippin, York Imperial, Winesap, Grimes Golden.	
Baltimore	[3] 53	Virginia, West Virginia, Pennsylvania.	5	York Imperial, Baldwin, Ben Davis, Grimes Golden, Northern Spy.	Stayman Winesap, 30 to 35 per cent over York Imperial.
Boston	[4] 47	New York, Maine, Delaware, Massachusetts, New Hampshire.	25	Baldwin, Rhode Island Greening, Northern Spy, Ben Davis, Roxbury Russet.	Massachusetts and New Hampshire Baldwins.
Chicago	52	Michigan, Illinois, New York	Negligible	Baldwin, Rhode Island Greening, Jonathan, Northern Spy, Ben Davis.	Northern Spy and Jonathan.
Cincinnati	63	New York, Michigan, Virginia, Maine.	Comparatively small quantity	Baldwin, Northwestern Greening, Northern Spy, Jonathan, Rome Beauty.	Fancy, high-colored stock of red varieties.
Cleveland	64	New York, Michigan, West Virginia, Ohio.	Not over 5	Baldwin, Rhode Island Greening, York Imperial, Tompkins King, Roxbury Russet.	Practically none.
Indianapolis	[2] 58	New York, Illinois, Michigan, Indiana.	3 to 5	Baldwin, Rhode Island Greening, Winesap, Grimes Golden, Rome Beauty.	
Milwaukee	[2] 39	Illinois, Michigan, New York, Wisconsin.	2 to 4	York Imperial, Baldwin, Rhode Island Greening, Northern Spy, Ben Davis, Gano, Winesap.	Northern Spy.
Minneapolis	38	New York, Missouri, Michigan, Illinois, Kansas.	2 to 5	Baldwin, Ben Davis, Jonathan, Northern Spy, Rhode Island Greening, Northwestern Greening.	Northern Spy, Jonathan.
New Orleans	[2] 28	Illinois, Missouri	None	Arkansas Black, York Imperial, Ben Davis.	
New York	53	New York, Virginia, New Jersey, West Virginia, Delaware, Maryland, Maine, Pennsylvania.	Less than 1	Baldwin, Rhode Island Greening, Northern Spy, Tompkins King, Yellow Newtown, Ben Davis.	Fancy packs of McIntosh, Northern Spy, Fameuse, and Winesap, often sell 40 to 50 per cent above Greening and Baldwin.
Norfolk		Virginia, West Virginia, Maryland, Pennsylvania.	Practically none	York Imperial, Grimes Golden, Ben Davis, Winesap, Yellow Newtown.	Winesap, and in late spring Yellow Newtown, often 25 per cent above York Imperial.

Philadelphia	60	New York, Pennsylvania, Virginia, Delaware, West Virginia, Maryland.	Approximately 20, mostly early varieties.	Baldwin, Rhode Island Greening, Ben Davis, York Imperial, Stayman Winesap.	Starr, Williams and Winesap.
Pittsburgh	72	New York, Pennsylvania, West Virginia, Virginia, Delaware.	Negligible	Baldwin, Tompkins King, Northern Spy, York Imperial, Ben Davis.	Tompkins King brings slight premium over Baldwin.
St. Louis	61	Illinois, New York	1 to 2	Ben Davis, Jonathan, Winesap, Rome Beauty, Northwestern and Rhode Island Greening, Baldwin, York Imperial.	Jonathan 15 per cent above Grimes Golden; Winesap 50 per cent above Ben Davis.
Washington	55	Virginia, West Virginia, New York, Maryland.	Not over 3	York Imperial, Grimes Golden, Stayman Winesap, Black Twig, Winesap, Yellow Newtown.	Grimes Golden, Winesap, and Yellow Newtown sell above average.

[1] Total car-lot supplies reduced to bushels on basis of 525 bushels to a car of barreled apples and 756 to a car of boxed.
[2] Average for 1923 and 1924 only; earlier figures not available.
[3] Figures available for 1924 only.
[4] Average for four years, 1920 to 1923.

TABLE 3.—*Total production of apples in the United States by six-year averages, 1894 to 1923*

[In thousands—last 000 omitted]

Six-year period	Barreled-apple region	Western boxed-apple region	Total production
Average:	*Bushels*	*Bushels*	*Bushels*
1894–1899	166, 952	7, 054	174, 006
1900–1905	175, 636	10, 912	186, 548
1906–1911	149, 471	15, 029	164, 500
1912–1917	176, 237	27, 845	204, 082
1918–1923	124, 943	48, 379	173, 322

TABLE 4.—*Estimated total production in the barreled-apple region by States, 1918 to 1923, with comparisons*

[In thousands—000 omitted]

State	1918	1919	1920	1921	1922	1923	Average 1918–1923	
							Total production	Commercial crop compared with total production
	Bushels	*Bushels*	*Bushels*	*Bushels*	*Bushels*	*Bushels*	*Bushels*	*Per cent*
Alabama	1, 662	577	1, 186	890	1, 098	731	1, 024	5
Arkansas	1, 290	7, 164	3, 900	120	2, 400	3, 025	2, 983	55
Connecticut	999	1, 395	2, 375	758	1, 300	1, 600	1, 404	29
Delaware	714	606	822	68	1, 414	1, 200	804	81
Georgia	1, 713	417	1, 270	698	1, 135	864	1, 016	23
Illinois	3, 459	4, 673	5, 866	2, 381	9, 720	7, 500	5, 600	55
Indiana	1, 794	1, 190	4, 596	1, 029	4, 148	5, 035	2, 965	28
Iowa	1, 584	1, 810	4, 410	630	4, 410	4, 350	2, 866	22
Kansas	1, 503	1, 835	1, 144	172	3, 280	2, 166	1, 683	61
Kentucky	2, 799	1, 281	5, 022	636	5, 070	2, 625	2, 906	11
Maine	2, 010	4, 829	1, 680	4, 060	1, 250	2, 500	2, 722	46
Maryland	2, 034	1, 519	2, 600	225	1, 500	2, 300	1, 696	49
Massachusetts	2, 430	3, 187	3, 575	1, 125	3, 010	3, 300	2, 771	40
Michigan	9, 792	5, 844	16, 500	6, 317	11, 850	13, 159	10, 577	51
Minnesota	996	1, 336	1, 350	900	1, 020	1, 520	1, 187	15
Missouri	4, 245	5, 132	4, 724	480	9, 400	7, 072	5, 176	46
Nebraska	525	907	797	125	1, 620	880	809	38
New Hampshire	1, 155	1, 364	1, 200	700	775	935	1, 022	42
New Jersey	2, 463	1, 666	2, 942	667	2, 610	2, 203	2, 092	71
New York	40, 878	14, 350	47, 087	13, 500	36, 000	25, 000	29, 469	49
North Carolina	3, 588	2, 000	6, 320	593	6, 000	2, 700	3, 534	13
Ohio	7, 005	2, 976	13, 960	3, 390	7, 298	12, 395	7, 837	30
Oklahoma	660	1, 600	585	486	1, 140	1, 240	952	10
Pennsylvania	16, 080	5, 513	18, 584	2, 208	11, 400	10, 855	10, 773	28
Rhode Island	189	334	390	63	200	450	271	50
South Dakota	273	168	180	126	263	212	204	4
Tennessee	4, 050	1, 259	4, 280	754	4, 250	1, 311	2, 651	12
Texas	273	487	274	274	264	270	307	20
Vermont	990	960	993	600	960	521	837	49
Virginia	10, 068	8, 943	13, 744	570	8, 960	10, 000	8, 714	51
West Virginia	5, 856	4, 189	8, 040	420	5, 625	8, 320	5, 408	51
Wisconsin	2, 811	1, 545	2, 250	1, 050	2, 024	2, 340	2, 003	17
Other States	1, 407	478	664	473	636	425	680	----------
Total	137, 295	91, 534	183, 310	46, 488	152, 030	139, 004	124, 943	41
Total western boxed-apple region	32, 330	50, 552	40, 367	52, 514	50, 672	63, 838	48, 379	75
Total United States	169, 625	142, 086	223, 677	99, 002	202, 702	202, 842	173, 322	50

TABLE 5.—*Estimated commercial production in the barreled-apple region, by States, 1918 to 1923, with comparisons*

[In thousands—000 omitted]

State	1918	1919	1920	1921	1922	1923	Average, 1918–1923	
							Commercial production	Percentage of total of these States
	Barrels	*Barrels*	*Barrels*	*Barrels*	*Barrels*	*Barrels*	*Barrels*	
Alabama	26	9	20	15	18	12	17	0.1
Arkansas	241	1,100	724	16	520	656	543	3.2
Connecticut	108	119	215	70	108	200	137	.8
Delaware	186	155	219	14	380	340	216	1.3
Georgia	117	35	106	58	95	60	78	.5
Illinois	837	712	1,369	397	1,450	1,400	1,028	6.0
Indiana	266	137	542	109	277	300	272	1.6
Iowa	101	211	420	25	220	290	211	1.2
Kansas	333	459	286	29	546	400	342	2.0
Kentucky	108	57	218	31	169	70	109	.6
Maine	226	675	230	657	232	480	417	2.5
Maryland	315	177	399	20	280	460	275	1.6
Massachusetts	300	335	375	172	461	600	374	2.2
Michigan	1,495	1,050	3,167	1,208	1,699	2,118	1,790	10.5
Minnesota	40	61	78	64	41	61	58	.3
Missouri	735	1,010	924	30	1,250	850	800	4.7
Nebraska	72	180	110	17	130	103	102	.6
New Hampshire	122	187	170	110	119	150	143	.8
New Jersey	514	456	848	132	552	470	495	2.9
New York	5,950	2,975	6,500	3,300	6,000	4,200	4,821	28.3
North Carolina	184	92	250	25	236	100	148	.9
Ohio	902	280	1,445	360	608	1,033	771	4.5
Oklahoma	17	43	29	21	38	42	32	.2
Pennsylvania	1,116	759	1,547	221	1,216	1,266	1,021	6.0
Rhode Island	20	65	75	8	20	80	45	.3
South Dakota	3	3	5	0	4	3	3	.0
Tennessee	218	68	204	45	95	30	110	.7
Texas	11	37	21	21	15	15	20	.1
Vermont	105	203	190	116	128	89	138	.8
Virginia	1,766	1,653	1,988	80	1,400	1,950	1,473	8.7
West Virginia	1,092	648	1,340	130	881	1,400	915	5.4
Wisconsin	114	108	161	64	101	136	114	.7
Total	17,640	14,059	24,175	7,565	19,289	19,364	17,015	
Total western boxed-apple region	7,103	12,100	9,730	13,992	12,656	16,572	12,026	
Total United States	24,743	26,159	33,905	21,557	31,945	35,936	29,041	

TABLE 6.—*Car-lot shipments of apples from the barreled-apple region by principal sources, crop movement seasons 1918 to 1923*

State	1918–19	1919–20	1920–21	1921–22	1922–23	1923–24	Total	Average 1918 to 1923
	Cars	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*
Arkansas	1,065	4,574	3,868	6	2,620	2,763	14,896	2,483
Delaware	375	495	782	125	1,751	1,590	5,118	853
Georgia	123	82	182	160	394	252	1,193	199
Illinois	2,674	2,807	4,087	503	6,297	6,832	23,200	3,867
Indiana	144	81	301	47	220	428	1,221	203
Iowa	40	140	103	21	351	369	1,024	171
Kansas	398	543	832	64	1,083	1,412	4,332	722
Maine	257	2,423	425	4,499	290	918	8,812	1,469
Maryland	714	598	1,739	129	1,150	2,181	6,511	1,085
Massachusetts	252	430	609	166	284	246	1,987	331
Michigan	2,862	3,445	7,367	6,096	6,075	9,266	35,112	5,852
Minnesota	43	44	52	15	58	148	360	60
Missouri	1,167	2,240	1,933	115	3,083	4,050	12,588	2,098
Nebraska	118	165	151	10	554	484	1,482	247
New Hampshire	120	511	287	334	187	311	1,750	292
New Jersey	936	736	897	186	446	399	3,600	600
New York	22,900	10,060	35,736	17,779	30,080	20,434	136,989	22,831
North Carolina	139	150	645	22	422	198	1,576	263
Ohio	448	283	1,036	627	425	1,051	3,870	645
Pennsylvania	1,794	1,310	3,462	242	2,050	4,033	12,891	2,148
Tennessee	136	36	122	7	143	28	472	79

TABLE 6.—*Car-lot shipments of apples from the barreled-apple region by principal sources, crop movement seasons 1918 to 1923*—Continued

State	1918–19	1919–20	1920–21	1921–22	1922–23	1923–24	Total	Average 1918 to 1923
	Cars	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*
Vermont	130	188	161	162	154	91	886	148
Virginia	4, 227	6, 964	8, 911	409	6, 975	9, 830	37, 316	6, 219
West Virginia	2, 919	2, 932	4, 912	779	2, 240	7, 332	21, 114	3, 519
Wisconsin	22	26	114	104	205	387	858	143
Other States	33	78	126	81	132	146	596	99
Total	44, 036	41, 341	78, 840	32, 688	67, 670	75, 179	339, 754	56, 626
Western boxed-apple region	25, 591	45, 407	37, 277	56, 871	46, 290	63, 005	274, 441	45, 740
Total car-lot shipments	69, 627	86, 748	116, 117	89, 559	113, 960	138, 184	614, 195	102, 366

TABLE 7.—*Car-lot shipments from the barreled-apple region, by months, crop movement seasons 1918 to 1923, with comparisons*

Month	1918–19	1919–20	1920–21	1921–22	1922–23	1923–24	Total 1918 to 1923	Average 1918 to 1923		
								Barrel region	Western box region	Total
	Cars	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*
June [1]	172	97	150	82	869	91	1, 461	244	15	259
July	1, 058	1, 036	1, 712	877	2, 466	1, 985	9, 134	1, 522	438	1, 960
August	1, 702	1, 904	3, 090	2, 346	3, 906	2, 739	15, 687	2, 614	973	3, 587
September	5, 840	8, 142	10, 477	6, 680	11, 963	11, 438	54, 540	9, 090	4, 101	13, 191
October	16, 822	16, 526	27, 010	12, 318	22, 352	28, 093	123, 121	20, 520	16, 118	36, 638
November	7, 179	5, 030	15, 055	2, 917	10, 718	12, 918	53, 817	8, 970	10, 310	19, 280
December	3, 232	1, 943	5, 858	1, 224	3, 253	3, 425	18, 935	3, 156	4, 119	7, 275
January	2, 982	1, 440	4, 490	1, 252	3, 102	3, 473	16, 739	2, 790	3, 188	5, 978
February	2, 446	1, 790	4, 741	1, 654	2. 766	3, 146	16, 543	2, 757	2, 979	5, 736
March	1, 465	2, 027	3, 815	1, 607	2, 881	3, 731	15, 526	2, 588	1, 910	4, 498
April	735	797	1, 615	1, 023	1, 869	2, 196	8, 235	1, 373	950	2, 323
May	339	561	718	583	1, 228	1, 391	4, 820	803	542	1, 345
June [2]	64	48	109	125	297	553	1, 196	199	97	296
Total	44, 036	41, 341	78, 840	32, 688	67, 670	75, 179	339, 754	56, 626	45, 740	102, 366

[1] New stock. [2] Old stock.

TABLE 8.—*Annual car-lot unloads of apples at 12 cities from the barreled-apple region, by principal States of origin, 1918 to 1923, with comparisons*

NEW YORK

State	1918	1919	1920	1921	1922	1923	Total, 1918 to 1923	Average, 1918 to to 1923	
								Car-lot unloads	Percentage of total from these States
	Cars	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	
New York	4, 694	4, 449	4, 378	5, 198	6, 467	6, 513	31, 699	5, 283	70. 2
Virginia	853	688	1, 487	623	455	1, 109	5, 215	869	11. 6
New Jersey	1, 140	513	454	2	48	60	2, 217	370	4. 9
West Virginia	499	154	235	50	122	523	1, 583	264	3. 5
Delaware	351	110	137	3	140	149	890	148	2. 0
Maryland	177	77	136	38	97	257	782	130	1. 7
Maine	233	122	40	270	14	26	705	118	1. 6
Pennsylvania	87	83	64	103	94	314	745	124	1. 6
Massachusetts	104	167	108	66	1	36	482	80	1. 1
Vermont	121	97	73	65	42	58	456	76	1. 0
Illinois	3	32	24	15	0	0	74	12	.2
Other Eastern States	51	101	49	22	9	60	292	49	.6
Total	8, 313	6, 593	7, 185	6, 455	7, 489	9, 105	45, 140	7, 523	
Western boxed-apple region	3, 012	3, 949	3, 851	5, 136	5, 012	6, 401	27, 361	4, 560	
Total car-lot unloads	11, 325	10, 542	11, 036	11, 591	12, 501	15, 506	72, 501	12, 083	

TABLE 8.—*Annual car-lot unloads of apples at 12 cities from the barreled-apple region, by principal States of origin, 1918 to 1923, with comparisons*—Con.

CHICAGO

State	1918	1919	1920	1921	1922	1923	Total, 1918 to 1923	Average, 1918 to 1923	
								Car-lot unloads	Percentage of total from these States
	Cars	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	
Michigan	1,105	1,295	3,063	2,071	2,337	2,673	12,544	2,091	50.0
Illinois	756	1,198	827	248	1,038	911	4,978	830	19.9
New York	1,555	559	1,031	612	587	414	4,758	793	19.0
Missouri	47	233	95	18	122	205	720	120	2.9
Arkansas	1	395	11	0	5	5	417	69	1.7
Maine	46	141	1	95	3	0	286	48	1.1
Pennsylvania	105	37	34	9	54	15	254	42	1.0
Wisconsin	32	21	14	35	16	93	211	35	.8
Virginia	39	33	20	7	0	6	105	18	.4
West Virginia	15	21	27	1	6	14	84	14	.3
Other Eastern States	164	160	164	53	83	102	726	121	2.9
Total	3,865	4,093	5,287	3,149	4,251	4,438	25,083	4,181	
Western boxed-apple region	670	1,953	1,813	3,298	2,283	5,913	15,930	2,655	
Total car-lot unloads	4,535	6,046	7,100	6,447	6,534	10,351	41,013	6,836	

PITTSBURGH

New York	1,565	1,067	1,350	1,498	1,714	1,511	8,705	1,451	64.9
Pennsylvania	143	119	230	169	96	141	898	150	6.7
Virginia	410	176	97	17	43	72	815	136	6.0
West Virginia		207	159	101	123	178	768	154	6.9
Delaware	67	65	86	35	223	124	600	100	4.5
Ohio	67	63	29	130	15	26	330	55	2.5
Michigan	32	42	24	55	50	82	285	48	2.1
Maryland	31	91	46	3	55	45	271	45	2.0
Maine	13	2	7	151	20	3	196	33	1.5
Illinois	34	26	40	1	26	3	130	22	1.0
Other Eastern States	41	40	55	27	55	32	250	42	1.9
Total	2,403	1,898	2,123	2,187	2,420	2,217	13,248	2,236	
Western boxed-apple region	546	308	663	619	600	787	3,523	587	
Total car-lot unloads	2,949	2,206	2,786	2,806	3,020	3,004	16,771	2,823	

PHILADELPHIA

New York	1,127	733	940	1,040	905	637	5,382	897	44.5
Pennsylvania	368	255	579	217	211	474	2,104	351	17.4
Virginia	435	338	261	150	37	331	1,552	259	12.8
Delaware	65	112	140	22	187	251	777	129	6.4
West Virginia	175	193	105	37	26	85	621	104	5.2
Maryland	122	128	126	26	61	153	616	103	5.1
Maine	3	48	40	207	17	3	318	53	2.6
New Jersey	35	35	13	62	4	3	152	25	1.2
Other Eastern States	224	233	52	61	1	8	579	96	4.8
Total	2,554	2,075	2,256	1,822	1,449	1,945	12,101	2,017	
Western boxed-apple region	144	785	960	1,496	1,065	1,266	5,716	953	
Total car-lot unloads	2,698	2,860	3,216	3,318	2,514	3,211	17,817	2,970	

ST. LOUIS

Illinois	690	901	798	62	1,507	1,839	5,797	966	71.9
New York	241	68	350	232	53	46	990	165	12.3
Missouri	64	80	57	22	94	198	515	86	6.4
Michigan	18	1	50	189	1	32	291	48	3.6
West Virginia	67	8	38	5	1	0	119	20	1.5
Virginia	48	4	19	4	4	1	80	13	1.0
Pennsylvania	17	10	15	7	3	7	59	10	.7

TABLE 8.—*Annual car-lot unloads of apples at 12 cities from the barreled-apple region, by principal States of origin, 1918 to 1923, with comparisons*—Con.

ST. LOUIS—Continued

State	1918	1919	1920	1921	1922	1923	Tstal 1918 to 1923	Average, 1918 to 1923	
								Car-lot unloads	Percentage of total from these States
	Cars	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	
Arkansas	4	22	14	1	1	5	47	8	0.6
Maine	0	0	0	32	0	0	32	5	.4
Other Eastern States	29	20	29	15	31	5	129	22	1.6
Total	1,178	1,114	1,370	569	1,695	2,133	8,059	1,343	
Western boxed-apple region	362	264	605	1,284	415	602	3,532	589	
Total car-lot unloads	1,540	1,378	1,975	1,853	2,110	2,735	11,591	1,932	

CLEVELAND

New York	459	479	758	662	1,200	610	4,168	695	63.2
Michigan	38	85	43	22	30	256	474	79	7.2
West Virginia	67	71	78	3	48	89	356	59	5.4
Ohio	81	32	66	21	40	61	301	50	4.5
Pennsylvania	58	56	63	9	11	21	218	36	3.3
Illinois	32	36	46	4	45	44	207	35	3.2
Virginia	40	42	72	5	25	21	205	34	3.1
Delaware	23	20	24	0	31	31	129	22	2.0
Maryland	18	30	18	0	16	25	107	18	1.6
Maine	3	30	6	17	5	0	61	10	.9
Other Eastern States	69	100	69	10	50	74	372	62	5.6
Total	888	981	1,243	753	1,501	1,232	6,598	1,100	
Western boxed-apple region	304	419	453	425	400	629	2,630	438	
Total car-lot unloads	1,192	1,400	1,696	1,178	1,901	1,861	9,228	1,538	

CINCINNATI

New York	431	445	737	697	652	457	3,419	570	53.9
Michigan	77	143	97	224	40	278	859	143	13.5
Virginia	110	88	84	48	5	44	379	63	6.0
Maine	32	135	19	145	9	6	346	58	5.5
Ohio	141	14	78	7	5	35	280	47	4.4
West Virginia	58	73	39	37	7	54	268	45	4.2
Illinois	23	37	27	25	12	86	210	35	3.3
Pennsylvania	9	3	12	7	0	27	58	10	.9
Maryland	1	3	18	3	4	9	38	6	.6
Delaware	3	6	0	2	1	14	26	4	.4
Other Eastern States	58	259	82	21	20	23	463	77	7.3
Total	943	1,206	1,193	1,216	755	1,033	6,346	1,058	
Western boxed-apple region	185	242	423	587	501	622	2,560	426	
Total car-lot unloads	1,128	1,448	1,616	1,803	1,256	1,655	8,906	1,484	

BOSTON

New York			375	418	559	276	1,628	407	40.2
Maine			110	466	127	238	941	235	23.2
Delaware			91	9	173	186	459	115	11.4
Massachusetts			165	42	64	68	339	84	8.3
New Hampshire			51	84	46	78	259	65	6.4
Maryland			27	8	49	21	105	26	2.6
New Jersey			23	4	22	35	84	21	2.1
Virginia			12	7	16	33	68	17	1.7
Pennsylvania			10	14	19	21	64	16	1.6
West Virginia			8	0	21	18	47	12	1.2
Vermont			2	7	1	1	11	3	.3
Other Eastern States			14	3	8	15	40	10	1.0
Total			888	1,062	1,105	990	4,045	1,011	
Western boxed-apple region			592	860	684	1,030	3,166	792	
Total car-lot unloads			1,480	1,922	1,789	2,020	7,211	1,803	

TABLE 8.—*Annual car-lot unloads of apples at 12 cities from the barreled-apple region, by principal States of origin, 1918 to 1923, with comparisons*—Con.

DETROIT

State	1918	1919	1920	1921	1922	1923	Total, 1918 to 1923	Average, 1918 to to 1923	
								Car-lot unloads	Percentage of total from these States
	Cars	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	
Michigan	151	343	255	300	352	605	2,006	334	44.7
New York	159	264	143	185	314	297	1,362	227	30.4
Delaware	7	42	25	8	89	55	226	38	5.0
Illinois	37	89	10	1	20	36	193	32	4.3
Virginia	31	38	4	0	0	0	73	12	1.6
West Virginia	16	19	7	0	0	2	44	7	1.0
Ohio	14	11	1	1	0	0	27	5	.6
Other Eastern States	127	280	91	11	44	3	556	93	12.4
Total	542	1,086	536	506	819	998	4,487	748	
Western boxed-apple region	131	419	423	517	583	784	2,857	476	
Total car-lot unloads	673	1,505	959	1,023	1,402	1,782	7,344	1,224	

KANSAS CITY

Missouri	191	183	126	19	229	311	1,059	177	49.6
Kansas	38	42	110	6	96	160	452	75	21.1
New York	22	2	120	25	0	1	170	28	7.9
Arkansas	53	35	49	6	16	6	165	28	7.9
Illinois	39	20	32	3	0	5	99	16	4.5
Iowa	1	6	4	0	2	1	14	2	.6
Other Eastern States	10	3	42	92	6	27	180	30	8.4
Total	354	291	483	151	349	511	2,139	356	
Western boxed-apple region	355	381	522	846	425	996	3,525	588	
Total car-lot unloads	709	672	1,005	997	774	1,507	5,664	944	

MINNEAPOLIS

New York	193	4	90	32	35	14	368	61	24.1
Missouri	45	62	33	4	102	85	331	55	21.7
Illinois	39	41	24	5	120	41	270	45	17.8
Michigan	14		50	10	30	16	120	24	9.5
Kansas	19	16	5	0	51	28	119	20	7.9
Minnesota	14	11	5	5	8	9	52	9	3.6
Other Eastern States	68	58	27	9	55	18	235	39	15.4
Total	392	192	234	65	401	211	1,495	253	
Western boxed-apple region	176	155	229	353	304	470	1,687	281	
Total car-lot unloads	568	347	463	418	705	681	3,182	534	

ST. PAUL

New York	72	9	83	17	14	3	198	33	25.8
Illinois	43	10	11	9	48	33	154	26	20.3
Michigan	20	1	54	5	34	9	123	20	15.6
Missouri	18	13	16	0	38	4	89	15	11.7
Kansas	2	1	6	0	28	6	43	7	5.5
Minnesota	6	6	1	1	3	6	23	4	3.1
Other Eastern States	29	34	17	5	39	13	137	23	18.0
Total	190	74	188	37	204	74	767	128	
Western boxed-apple region	220	153	213	312	289	354	1,541	257	
Total car-lot unloads	410	227	401	349	493	428	2,308	385	

TABLE 8.—*Annual car-lot unloads of apples at 12 cities from the barreled-apple region, by principal States of origin, 1918 to 1923, with comparisons*—Con.

TOTAL FOR 12 CITIES

State	1918	1919	1920	1921	1922	1923	Total, 1918 to 1923	Average, 1918 to to 1923	
								Car-lot unloads	Percentage of total from these States
	Cars	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	
Barreled-apple region [1]	21,622	19,603	22,986	17,972	22,438	24,887	129,508	21,954	
Western boxed-apple region [1]	6,105	9,028	10,747	15,733	12,561	19,854	74,028	12,602	
Total car-lot unloads [1]	27,727	28,631	33,733	33,705	34,999	44,741	203,536	34,556	

[1] No information available for Boston, 1918 and 1919.

TABLE 9.—*Car-lot unloads of apples from the barreled-apple region at 26 cities, by States of origin, June 1, 1923, to May 31, 1924* [1]

State	Atlanta	Birmingham	Boston	Buffalo	Chicago	Cincinnati	Cleveland	Columbus	Dallas	Detroit	Indianapolis	Kansas City	Louisville	Memphis
	Cars	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*
Alabama						1								
Arkansas		3			5				19			5		69
Connecticut														
Delaware			186	56	23	14	31	4		55			7	
Georgia	130	12				2							1	
Illinois	9	22		13	876	91	46	8		37	91	12	198	101
Indiana				11	26	9	3				60	1	55	12
Iowa		2			12						1	1	2	
Kansas		1			2			3	1			160		40
Kentucky	1			1						1			9	1
Maine			267			5							1	
Maryland	15	9	25	9	7	9	25	5			4		21	12
Massachusetts			57	1										
Michigan	1	2	3	20	2,733	328	263	13		663	67	13	153	15
Minnesota		12						1			2		2	
Missouri	2	10		5	205	8	6		5		9	312	30	226
Nebraska		1			3			1			1			2
New Hampshire			82											
New Jersey			36	4			2						1	
New York	2		297	129	263	532	441	62		266	103	1	97	1
North Carolina	1	1												1
Ohio	20	5	6	3	14	39	61	90			5		59	7
Oklahoma														
Pennsylvania	54	26	24	18	15	27	25	5			11		19	6
South Dakota					1									
Tennessee		1				8	5			1			3	
Texas					4									
Vermont			1											
Virginia	51	112	46		5	46	21	15			5		34	14
West Virginia	45	64	17	8	14	62	85	20		2	16		57	22
Wisconsin		3			94	1		1			2	3		3
Unknown	5	28	4	3			73	17		1	32	2	28	24
Total	336	314	1,051	281	4,302	1,182	1,087	245	25	1,026	409	510	777	556
Western boxed-apple region	218	372	986	179	5,455	708	678	186	512	746	256	939	298	269
Total car-lot unloads	554	686	2,037	460	9,757	1,890	1,765	431	537	1,772	665	1,449	1,075	825

[1] The first season for which reports for all the cities are available.

TABLE 9.—*Car-lot unloads of apples from the barreled-apple region at 26 cities, by States of origin, June 1, 1923, to May 31, 1924*—Con.

State	Milwaukee	Minneapolis	Newark	New Orleans	New York	Omaha	Philadelphia	Pittsburgh	Providence	St. Louis	St. Paul	Washington	Total
	Cars	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*
Alabama													1
Arkansas	3	2	1	8		1				5	2		133
Connecticut									1				1
Delaware	1		26		150		249	124	46	1			973
Georgia				1									146
Illinois	300	62	11	54		4		4	12	1,831	44		3,826
Indiana	4		3	1					3				188
Iowa		14				15			1	1	9		58
Kansas		28		12	1	17					6		271
Kentucky													13
Maine					30		3		24			1	331
Maryland			4	11	282		172	46	11			34	701
Massachusetts			9		36		1		34				138
Michigan	163	16	13	6	33	2		93	13	32	11	1	4,657
Minnesota		9	1	1					3		6		37
Missouri	10	105	2	50	4	55		3	7	139	17		1,210
Nebraska		5	1	4	1	1					5		25
New Hampshire					5		3	2	5				97
New Jersey			8		60		5	7	6				129
New York	107	10	392		6,585		609	1,310	172	4	1	23	11,407
North Carolina					1								4
Ohio	3		2	1				33	2			1	351
Oklahoma	2												2
Pennsylvania	8		30	1	432		545	184	1	7		31	1,469
South Dakota													1
Tennessee				1				6		1			26
Texas													4
Vermont					59								60
Virginia			8	9	946		358	97	10	1		335	2,113
West Virginia	1		26	12	537		88	169	9			64	1,318
Wisconsin	80			1	9			8			1		206
Unknown	7	1	20	34	8			36	10		5	8	346
Total	689	252	557	217	9,179	95	2,033	2,122	370	2,022	107	498	30,242
Western boxed-apple region	532	478	160	419	7,347	630	1,345	665	85	573	352	206	24,594
Total car-lot unloads	1,221	730	717	636	16,526	725	3,378	2,787	455	2,595	459	704	54,836

TABLE 10.—*Average estimated total and commercial production of the barreled-apple region, total car-lot shipments and unloads at 12 [1] cities, by States, average of seasons 1918 to 1923*

State	Average of seasons 1918 to 1923					
	Estimated production		Percentage of total crop, commercial	Shipments	Percentage of commercial crop shipped in car lots	Unloads at 12 cities
	Total	Commercial				
	1,000 bushels	*1,000 barrels*		*Cars*		*Cars*
Alabama	1,024	17	5	10	10	4
Arkansas	2,983	543	55	2,483	80	161
Connecticut	1,404	137	29	22	3	5
Delaware	804	216	81	853	69	567
Georgia	1,016	78	23	199	45	18
Illinois	5,600	1,028	55	3,867	66	2,051
Indiana	2,965	272	28	203	13	40
Iowa	2,866	211	22	171	14	28
Kansas	1,683	342	61	722	37	105
Kentucky	2,906	109	11	29	5	3
Maine	2,722	417	46	1,469	62	515
Maryland	1,696	275	49	1,085	69	363
Massachusetts	2,771	374	40	331	15	202
Michigan	10,577	1,790	51	5,852	57	2,836
Minnesota	1,187	58	15	60	18	28
Missouri	5,176	800	46	2,098	46	490
Nebraska	809	102	38	247	42	16
New Hampshire	1,022	143	42	292	36	89
New Jersey	2,092	495	71	600	21	428
New York	29,469	4,821	49	22,831	83	10,937
North Carolina	3,534	148	13	263	31	3
Ohio	7,837	771	30	645	15	170
Oklahoma	952	32	10	17	9	4
Pennsylvania	10,773	1,021	28	2,148	37	809
Rhode Island	271	45	50	0	0	1
South Dakota	204	3	4	3	18	1
Tennessee	2,651	110	12	79	13	48
Texas	307	20	20	17	15	3
Vermont	837	138	49	148	19	78
Virginia	8,714	1,473	51	6,219	74	1,375
West Virginia	5,408	915	55	3,519	67	658
Wisconsin	2,003	114	17	143	22	49
Other States	680			1		5
Total	124,943	17,015	41	56,626	58	[2] 22,223
Western boxed-apple region	48,379	12,026	75	45,740	96	13,244
Grand total	173,322	29,041	50	102,366	74	35,467

[1] New York, Chicago, Pittsburgh, Philadelphia, St. Louis, Cleveland, Cincinnati, Boston, Detroit, Kansas City, Minneapolis, and St. Paul.
[2] Includes 133 cars of unknown origin.

TABLE 11.—*Estimated total and commercial production of the barreled-apple region, total car-lot shipments, and unloads at 12 cities [1] by seasons 1918 to 1923*

Season	Production		Percentage of total crop, commercial	Shipments	Percentage of commercial production shipped	Unloads at 12 cities
	Total	Commercial				
Barreled-apple region:	*1,000 bushels*	*1,000 barrels*		*Cars*		*Cars*
1918–19	137,295	17,640	39	44,036	44	[2] 23,918
1919–20	91,534	14,059	46	41,341	51	[2] 19,900
1920–21	183,310	24,175	40	78,840	57	[2] 25,219
1921–22	46,488	7,565	49	32,688	76	14,072
1922–23	152,030	19,289	38	67,670	61	25,359
1923–24	139,004	19,364	42	75,179	68	24,873
Average, 1918–1923	124,943	17,015	41	56,626	58	22,223
Western boxed, average	48,379	12,026	75	45,740	96	13,244
Combined average	173,322	29,041	50	102,366	74	35,467

[1] See footnote 1, Table 10.
[2] Boston, 1918 and 1919, and St. Louis 1920 estimated.

TABLE 12.—*Car-lot unloads of apples at 12 cities, average 1918–1923,*[1] *compared with 1920 population of city market districts, including incorporated units within 10 miles*

City	Population market districts, 1920			Average car-lot unloads, calendar years 1918 to 1923 [1]				
	Total	Percentage of—		From barreled-apple region	Total cars	Total as bushels	Percentage of total car-lot supply	Per capita
		Total for 12 cities	United States urban					
				Cars	*Cars*	*Bushels*		*Bushels*
New York	8,034,349	37.0	14.8	7,523	12,083	7,396,935	35.1	0.9
Chicago	3,201,302	14.8	5.9	4,181	6,836	4,202,205	20.0	1.3
Philadelphia	2,428,728	11.2	4.5	2,017	2,970	1,779,393	8.4	.7
Boston	1,801,320	8.3	3.3	1,011	1,803	1,129,527	5.4	.6
Pittsburgh	1,216,464	5.6	2.2	2,208	2,795	1,602,972	7.6	1.3
Detroit	1,181,057	5.5	2.2	748	1,224	752,556	3.6	.6
St. Louis	1,014,457	4.7	1.9	1,343	1,932	1,150,359	5.5	1.1
Cleveland	951,579	4.4	1.7	1,100	1,538	908,628	4.3	1.0
Cincinnati	681,287	3.1	1.3	1,058	1,484	877,506	4.2	1.3
Minneapolis and St. Paul	679,864	3.1	1.2	377	915	604,653	2.9	.9
Kansas City	502,242	2.3	.9	356	944	631,428	3.0	1.3
Total	21,692,648	100.0	39.9	21,922	34,524	21,036,162	100.0	1.0

[1] Boston, average 1920–1923.

TABLE 13.—*Cold-storage holdings of barreled apples, by months, October 1, 1918, to June 1, 1924*

[In thousands—000 omitted]

Crop of—	Oct. 1	Nov. 1	Dec. 1	Jan. 1	Feb. 1	Mar. 1	Apr. 1	May 1	June 1
Barreled stock:	*Barrels*	*Barrels*	*Barrels*	*Barrels*	*Barrels*	*Barrels*	*Barrels*	*Barrels*	*Barrels*
1918–19		2,915	3,280	2,582	1,704	962	487	198	68
1919–20	824	3,108	3,326	2,693	2,092	1,385	705	274	64
1920–21	452	3,516	4,570	3,966	3,016	2,020	1,027	449	170
1921–22	570	1,822	1,979	1,742	1,424	996	561	248	74
1922–23	1,219	4,133	4,319	3,708	2,839	2,013	1,199	578	150
1923–24	664	4,619	5,477	4,962	3,993	3,024	1,925	1,113	451
Average	[1] 746	3,352	3,825	3,276	2,511	1,733	984	477	163
Boxed apples (expressed as barrels)	[1] 191	1,453	2,878	3,027	2,533	1,853	1,179	590	194
Combined average	[1] 937	4,805	6,703	6,303	5,044	3,586	2,163	1,067	357

[1] Average 1919 to 1923.

TABLE 14.—*Cold-storage holdings of apples in barrels and bushel baskets by principal States, by months, average 1920 to 1923*

[In thousands—000 omitted]

State	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug	Sept.	Oct.	Nov.	Dec.
	Bbls.	*Bbls.*	*Bbls.*	*Bbls.*	*Bbls.*	*Bbls.*	*Bbls.*	*Bbls.*	*Bbls.*	*Bbls.*	*Bbls*	*Bbls.*
Arkansas	37	26	14	8	------	------	------	------	------	4	41	41
Illinois	331	253	190	122	65	28	10	4	4	92	349	418
Indiana	49	37	25	14	7	2	1	------	1	14	47	59
Iowa	22	16	10	4	1	------	------	------	------	3	20	26
Kansas	22	15	12	6	2	1	------	------	------	3	14	14
Kentucky	27	18	12	7	2	1	------	------	------	4	21	30
Maryland	13	10	5	3	1	------	------	------	------	2	15	18
Massachusetts	85	65	41	18	6	2	------	------	------	2	46	80
Michigan	19	14	10	5	2	------	------	------	------	2	14	23
Minnesota	16	15	7	5	2	------	------	------	------	1	11	21
Missouri	179	138	91	50	21	7	1	------	2	53	193	223
Nebraska	10	7	5	2	------	------	------	------	------	------	12	16
New Jersey	75	67	46	38	14	7	------	------	------	24	94	104
New York	1, 162	950	635	299	114	30	6	2	8	303	1, 443	1, 613
Ohio	84	65	46	29	14	7	2	1	2	10	79	107
Pennsylvania	102	68	37	17	7	2	1	------	------	20	123	132
Rhode Island	22	19	15	11	5	2	------	------	------	2	17	23
Tennessee	23	16	10	5	2	------	------	------	------	5	24	31
Virginia	339	252	176	92	41	7	------	------	------	117	377	376
West Virginia	77	53	33	10	2	------	------	------	------	26	93	91
Wisconsin	18	9	8	7	4	2	------	------	------	2	18	24
District of Columbia	31	24	16	8	5	2	------	------	------	10	37	42

TABLE 15.—*Disposition of the apple crop of 1919*

[Based on the 1920 census of agricultural crops]

Item	Western box region		Barrel region		Total	
	Quantity	Percentage of total	Quantity	Percentage of total	Quantity	Percentage of total
	Bushels		*Bushels*		*Bushels*	
Total production	45, 971, 211	100. 0	90, 589, 786	100. 0	136, 560, 997	100. 0
Commercial crop [1]	36, 300, 000	79. 0	42, 177, 000	46. 5	78, 477, 000	57. 4
Rural consumption and waste [2]	5, 402, 028	11. 8	32, 576, 969	36. 0	37, 978, 997	27. 8
Cider, vinegar, and miscellaneous by-products	1, 936, 601	4. 2	12, 122, 659	13. 4	14, 059, 260	10. 3
Dried	1, 406, 571	3. 0	1, 701, 668	1. 9	3, 108, 239	2. 3
Canned	926, 011	2. 0	2, 011, 490	2. 2	2, 937, 501	2. 2

[1] Estimate of Bureau of Agricultural Economics.
[2] Quantity not sold from farms as reported in census.

TABLE 16.—*Market characteristics of leading varieties of barreled apples*

Variety	Where from chiefly	Main consuming season	Size	Color	Use	Price compared with Baldwin	Comment
Alexander	New York, Michigan, Canada.	October	Large	Red stripe.	Cooking	Lower	Poor quality; demand limited.
Arkansas Black	Illinois, Missouri	November to May	Rather large	Dark red	do	do	Handsome; poor quality.
Arkansas (Mammoth Black Twig).	Middle West, Virginia, West Virginia.	December to May	do	do	General	About same	Quality fair.
Baldwin	New York, New England, Michigan.	November to April.	Medium to large	Full red	do		Market leader; quality fair to good.
Ben Davis	Middle West, Virginia, West Virginia.	February to June	do	Mixed red	Cooking	Much lower	Long keeper, good shipper; poor quality; feature of late market.
Bietigheimer	New York, Michigan	October	Large to very large	Red	do	Lower	Poor quality, not popular.
Black Gilliflower	New York	October to December.	Medium	Dark red and green.	Dessert	Often higher	Distinctive quality, dry flesh; demand and supply light.
Delicious	Virginia, Maryland, Illinois.	October to April	Medium to large	Red	do	Higher	Distinctive appearance and quality.
Esopus Spitzenburg	New York, Michigan	October to February.	Medium	Bright red	do	Considerably higher.	High color and quality, old market favorite.
Fallawater	do	November to January.	Medium to large	Dull	Cooking	Lower	Quality fair to good.
Fall Pippin	do	October, November.	do	Green	General	About same	Good quality.
Fameuse	New England, New York, Michigan.	October to December.	Small	Striped	Dessert	Variable	Good quality, losing ground to McIntosh.
Gano	Middle West	February to June	Medium to large	Bright red	Cooking	Lower	Very good keeper and shipper; poor quality; Ben Davis class.
Gravenstein	New Jersey, New England, Michigan, Nova Scotia.	September, October.	Medium	Yellow with red stripes.	General	About same	Good quality, poor color and shape.
Grimes Golden	Virginia, West Virginia, Pennsylvania, Arkansas, Missouri.	October to January.	Small to medium	Yellow	do	Higher	Fine quality; popular in South and West.
Hubbardston	New York, Michigan, New England.	October to December.	Large	Mixed red	Dessert and general.	Mostly lower	Good quality, poor color; market limited.
Jonathan	Missouri, Arkansas, Illinois.	do	Medium	Bright red	do	Higher	Good color and quality.
Maiden Blush	Michigan, New York	October	do	Yellow and red.	General	About same	Demand limited.
McIntosh	New York, New England, Michigan, Wisconsin.	October to January.	do	Rich red	Dessert	Considerably higher.	High quality.

TABLE 16.—*Market characteristics of leading varieties of barreled apples*—Continued

Variety	Where from chiefly	Main consuming season	Size	Color	Use	Price compared with Baldwin	Comment
Missouri Pippin	Missouri, Kansas	February to May	Small to medium	Dull red, indistinct stripes.	General	Lower	Good color, long keeper, poor quality.
Northern Spy	New York, New England, Michigan.	October to March	Large	Mixed	Dessert and general.	Considerably higher.	High quality, variable size and shape; often tops barrel market.
Northwestern Greening	New York, Michigan, Virginia, Wisconsin, Iowa.	do	do	Greenish yellow.	Cooking	Usually lower.	Fair appearance, quality inferior to Rhode Island Greening.
Oldenburg	New York, New Jersey, Delaware, Michigan, Illinois.	August to October	Medium	Red striped.	do	Lower	Acid flavor, popular in season.
Rhode Island Greening	New York, Michigan	October to March	Medium to large	Greenish	Mostly cooking.	Usually lower.	Popular in some markets.
Rome Beauty	Ohio, Michigan	November to May	Rather large	Medium red.	do	About same	Poor quality.
Roxbury Russet	New York, New England, Michigan.	February to June	Medium	Greenish brown.	General	Much lower	Long keeper, poor appearance, hard to sell.
Stark	New York, Maine, Ohio	December to May	Medium to large	Dull red	Cooking	Lower	Rather poor quality.
Stayman Winesap	Virginia, Maryland, Pennsylvania, Ohio.	November to April	do	Red	General	About same	Often poor color, good quality.
Tolman Sweet	New York, Michigan	October to March	do	Yellow	Baking, dessert.	Variable	Leading sweet variety.
Tompkins King	do	November to February.	Large	Full red	General	Higher	Appearance and quality good.
Twenty Ounce	New York, New Jersey, Michigan.	September to November.	Large to very large	Striped	Cooking	Variable	Good appearance.
Wagener	Michigan, New York	November to January.	Medium	Red striped	General	Slightly lower.	Fair quality.
Wealthy	New York, New England, New Jersey, Michigan, Wisconsin.	October to December.	do	Full red	do	do	Uniform, attractive, acid, a leading fall apple.
Williams	New Jersey, New England	August, September.	do	Striped	do	Lower	Attractive.
Willowtwig	Illinois	February to May	Medium to large	Red	Cooking	Often higher	Long keeper, poor appearance and quality.
Winter Banana	Michigan, New York, Virginia.	October to December.	do	Yellow and light red.	Dessert	do	Attractive, rather poor quality.

Winesap	Virginia, Missouri, Illinois	January to May	Small to medium	Dark red	General	Higher	Good quality, a leading late storage apple.
Wolf River	New York, Michigan, New England.	October to November.	Very large	Red stripe	Cooking	Lower	Poor quality, often too large.
Yellow Newtown	Virginia, New York	January to May	Medium	Yellow or green.	General	Higher in some markets.	Fine quality, favored for export.
Yellow Transparent	New Jersey, Delaware, Illinois.	July to August	Small to medium	do	Cooking	Sometimes higher.	Leading early variety.
York Imperial	Virginia, Pennsylvania, West Virginia, Illinois.	October to February.	Medium	Light red	do	Slightly lower	Poor quality, much exported.

TABLE 17.—*Prices per barrel of Eastern Baldwin apples in principal consuming centers, by months, seasons 1918 to 1924*

Year and month	Prices to jobbers					Price f. o. b. shipping point
	New York	Philadelphia	Pittsburgh	Cleveland	Chicago	Rochester, N. Y.
1918–19	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*
October	4.00– 5.00	4.00– 5.50	4.25– 4.50	4.50	4.50– 5.00	4.25– 4.50
November	5.00– 6.00	4.75– 6.00	4.50– 5.50	5.00– 6.00	5.00– 6.00	4.75– 5.25
December	5.00– 7.00	4.50– 6.50	5.00– 6.50	5.50– 6.50	5.25– 6.50	5.00– 5.50
January	6.00– 7.50	6.25– 7.00	6.25– 8.00	6.25– 7.50	6.00– 7.50	5.50– 7.00
February	7.50–10.00	9.00–10.00	7.50–10.00	7.50–10.50	7.00– 9.00	8.00–10.00
March	9.00–10.50	9.00–10.00	9.00–10.50	9.00–10.50	9.00–11.00	9.00–10.25
1919–20						
October	6.50– 7.75		6.50– 7.75	8.00– 8.50	7.00– 8.50	6.50– 7.50
November	7.00– 8.50	6.75– 8.25	7.00– 8.50	7.50– 9.00	8.00– 9.50	7.00– 7.50
December	7.00– 8.50	6.75– 8.50	7.50– 8.50	8.00– 9.50	7.50– 8.50	7.50– 8.50
January	7.50– 8.50	7.00– 8.50	7.75– 9.00	7.50– 9.50	7.50– 8.00	7.00– 7.75
February	8.00– 9.00	7.50– 9.00	8.00– 9.00	9.00–10.00	8.00– 8.50	7.25– 8.00
March	8.00– 9.50	8.00– 9.50	8.00– 8.50	8.50–10.00	8.50– 9.50	7.50– 9.00
April	8.50– 9.00	8.00–10.00	8.25–10.00	8.00– 9.25	8.00– 9.00	
May	10.00	9.00–12.00	10.50–12.00	11.50–13.00	8.00– 8.50	
1920–21						
October	4.00– 4.50				4.00– 5.25	3.75– 4.25
November	4.00– 5.00	4.00– 5.00	4.50– 5.50	4.50– 5.00	4.00– 5.50	4.00– 4.25
December	3.50– 5.50	3.50– 5.00	3.50– 6.00	4.00– 5.00	4.50– 5.50	4.00– 4.25
January	4.00– 5.00	4.00– 4.50	4.00– 4.75	3.50– 5.00	4.00– 5.00	3.50– 4.00
February	4.50– 5.00	4.00– 5.00	4.00– 5.25	4.00– 5.50	4.50– 5.25	4.00– 4.50
March	5.00– 5.75	5.00– 5.75	4.75– 5.50	4.75– 6.00	5.00– 6.00	4.75– 5.00
April	5.00– 6.50	4.75– 6.50	4.75– 6.00	4.50– 5.50	4.50– 6.50	
1921–22						
September	5.50– 7.50	6.00– 7.50	6.50– 7.00	[1]	7.00– 7.50	6.00
October	7.00– 7.50	6.50– 7.50	6.50– 7.50		7.00– 7.50	6.25– 6.50
November	6.50– 8.00	6.00– 7.50	6.50– 7.50		7.00– 7.50	6.25– 6.50
December	6.00– 8.25	6.00– 7.50	6.00– 7.50		6.75– 7.50	7.00
January	7.00– 8.00	7.00– 8.00	7.00– 7.75		7.00– 8.00	6.50– 7.25
February	7.00– 8.00	7.00– 8.00	7.25– 8.00		7.50– 8.50	7.00– 7.25
March	7.00– 8.00	7.00– 8.00	7.25– 8.00		7.50– 8.50	7.25– 7.50
April	7.50– 8.25	7.00– 8.25	7.00– 8.00		7.50– 8.50	
May	7.50– 9.00	6.50– 8.50	8.00– 9.00		7.50– 8.00	
June	8.00– 9.00	7.50– 8.75	7.50– 9.00			
1922–23						
October						3.25–3.75
November	4.00–4.50	3.50–4.25	3.50–4.50	4.15–4.50	3.50–4.75	3.50–4.00
December	4.00–5.00	3.75–5.00	4.25–4.50	4.25–5.00	4.00–5.50	3.75–4.75
January	4.25–5.00	4.00–5.25	4.25–5.25	4.50–5.25	4.50–5.00	4.00–4.50
February	4.25–5.50	4.50–5.25	4.50–5.25	4.75–5.25	4.75–5.50	4.25–4.50
March	5.00–5.50	5.00–5.75	5.00–5.50	5.25–6.00	5.00–6.00	4.75–5.25
April	5.25–6.00	5.25–6.50	5.25–6.50	5.50–5.75	5.50–6.00	
May	6.00–7.50	6.50–8.00	5.00–7.00		5.75–6.75	
1923–24						
October	3.00–4.00	3.25–5.00		[2] 3.75–4.50	([3])	3.75–4.00
November	4.00–4.50	4.00–5.00	4.25–4.50	[2] 3.00–3.75		4.00
December	3.50–5.00	3.50–4.50	4.00–5.00	4.75–5.00		3.25–4.40
January	4.00–5.00	2.50–4.00	3.50–4.50	4.25–5.50		4.00–4.50
February	3.50–4.50	3.50–4.50	3.50–4.75	4.00–5.25		3.75–4.00
March	3.25–4.25	3.25–4.50	3.50–4.50	4.00–4.50		3.50–3.75
April	3.00–4.25	3.00–4.00	3.00–4.00	4.00–4.25		
May	3.00–4.25	3.00–4.50	3.00–4.25	3.50–4.50		
June	4.00–5.25	3.00–3.75	4.00–5.00			
1924–25						
October						5.25–5.50
November	4.00–5.50	4.50–5.50	4.00–6.00	5.85–6.00	5.75–6.00	5.25–6.00
December	4.75–6.50	4.75–6.00	5.00–6.50	4.75–6.25	6.00–6.50	5.50
January	5.50–7.00	4.75–6.25	5.50–7.00	6.00–7.00	6.00–7.00	6.00–6.50
February	6.00–7.50	6.50	5.50–7.00	6.00–7.00	6.00–7.50	6.50
March	5.25–7.00	5.50–7.00	5.00–7.00	6.00–7.00	6.50–7.50	6.00–6.25

[1] Practically no sales of eastern Baldwins reported at Cleveland in 1921–22.
[2] Estimated from price of bushel baskets.
[3] Practically no sales of eastern Baldwins reported at Chicago in 1923–24.

TABLE 18.—*Prices to jobbers of midwestern Ben Davis apples in barrels, by months, seasons 1918 to 1924* [1]

Year and month	Chicago	St. Louis	Kansas City	Minneapolis	St. Paul
1918–19	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*
November	4. 00– 4. 25	3. 50–4. 00	5. 75–6. 50	5. 50– 6. 50	5. 00– 6. 00
December	4. 25– 5. 25	5. 00–5. 50	5. 75–6. 25	5. 50– 6. 50	6. 00– 6. 50
January	5. 75– 7. 00	5. 00–6. 00	6. 75–7. 00	6. 50– 7. 00	6. 50– 7. 00
February	6. 50– 7. 50	6. 50–8. 50	6. 75–8. 00	7. 00–10. 00	8. 50–10. 00
March	8. 50–10. 00	8. 50–9. 50	9. 75	10. 00–11. 00	10. 00–12. 00
1919–20					
November		5. 50–7. 50	7. 50	7. 50	7. 00– 7. 50
December		7. 00–7. 50	7. 00–7. 75	7. 50	7. 00– 7. 50
January	5. 50– 6. 50	6. 75–7. 50	7. 00–7. 25	7. 00– 7. 50	6. 50– 7. 50
February	6. 00– 6. 50	7. 00–7. 50	6. 75–7. 00	7. 00– 7. 50	6. 50– 7. 50
March	7. 50– 8. 00	7. 00–8. 00	7. 00–8. 00	7. 50– 8. 50	7. 00– 9. 00
April	7. 50– 8. 00	7. 25–8. 75	7. 50–8. 00	8. 50– 9. 00	8. 50
May	7. 50– 9. 00	8. 00–8. 50	7. 50–8. 00	8. 50–10. 00	
1920–21					
November	3. 75– 4. 50	3. 50–4. 00	5. 00–6. 00	5. 50	5. 50
December			5. 00–6. 00	4. 75– 5. 75	
January	3. 75– 4. 75	4. 25–4. 75	5. 00–6. 00	5. 50– 6. 50	5. 00– 5. 25
February	4. 25– 4. 75	4. 75–5. 25	5. 00–5. 75		
March	4. 50– 5. 00	5. 00–5. 25	5. 00–6. 00		
April	4. 50– 5. 75	5. 00–5. 50	5. 75–6. 00		7. 00– 7. 50
May	5. 50– 6. 00	6. 00–6. 50	5. 75–6. 00		
1922–23					
November		1. 50–2. 85			3. 50– 4. 25
December	4. 00– 4. 50	2. 75–3. 50		4. 00	4. 00
January	3. 00– 3. 25	3. 25–3. 75	3. 75	3. 90– 5. 00	4. 00– 4. 50
February	3. 00– 3. 50	3. 75	3. 75	4. 50– 5. 00	4. 50– 4. 75
March	3. 50– 4. 50	3. 75–4. 00	3. 75–6. 50	4. 75– 5. 00	4. 50– 5. 00
April	4. 00– 4. 50	4. 00–4. 25	4. 50–4. 75	5. 00– 6. 00	5. 00– 5. 50
May	4. 00– 6. 00	4. 00–5. 00	4. 75–5. 00	5. 50– 6. 00	5. 00– 5. 50
1923–24					
November		2. 25–3. 00	3. 25–3. 50	4. 00– 4. 50	3. 75– 4. 50
December		3. 00–3. 75	3. 25–3. 50	3. 75– 4. 50	4. 50
January		3. 25–3. 50	4. 00	4. 25– 4. 75	4. 00– 4. 50
February	2. 75	3. 25–3. 50	3. 50–4. 00	4. 50– 4. 75	4. 50– 5. 00
March		3. 00–3. 50	3. 50	4. 25– 4. 75	4. 50
April	2. 50– 3. 50	2. 25–3. 25	3. 50	4. 50	3. 25– 3. 50
May	2. 00– 2. 50		3. 50	3. 25– 3. 50	3. 25– 3. 50
1924–25					
November	5. 75– 6. 00	3. 50–4. 75		4. 50– 6. 00	
December	4. 00– 4. 50	4. 50–5. 25	4. 50–5. 00	5. 50– 6. 00	
January		5. 00–5. 75	5. 00–5. 75	6. 00– 6. 50	
February	5. 00– 5. 50	5. 25–5. 75	5. 00–5. 75	6. 50	
March	5. 00– 6. 00	5. 00–6. 00	5. 50–5. 75	6. 50	

[1] Practically no sales of midwestern Ben Davis reported in 1921–22.

TABLE 19.—*Prices to jobbers of eastern York Imperial apples in barrels, by months, seasons 1918 to 1924* [1]

Year and month	New York	Philadelphia	Pittsburgh	Baltimore	Cleveland	Chicago
1918–19	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*
October	4. 25– 5. 00	4. 25– 5. 50	5. 00– 6. 00	4. 50– 5. 00	4. 50– 5. 25	5. 00– 5. 50
November	4. 50– 6. 00	4–50– 5. 75		4. 50– 5. 25	4. 00– 5. 00	5. 00– 6. 25
December	6. 00– 7. 50	5. 50– 7. 00		6. 50		6. 50– 6. 75
January	6. 50– 8. 00	8. 00– 8. 50		6. 00– 7. 50		
February	8. 25–10. 50	8. 50–10. 50		8. 00– 9. 50		
March		10. 00		9. 00–10. 00		
1919–20						
October	5. 50– 7. 25	6. 35– 7. 25	7. 00– 7. 50	6. 75– 7. 50	7. 25– 8. 00	8. 00– 8. 50
November	6. 50– 8. 50	6. 50– 7. 50	7. 00– 8. 00	7. 00– 8. 25	7. 50– 7. 75	7. 50– 8. 25
December	7. 00– 8. 00	7. 00– 8. 00	7. 25– 8. 00	8. 00– 8. 50	6. 50– 7. 50	6. 50– 8. 00
January	6. 50– 8. 00	6. 50– 7. 50	6. 00– 7. 50	7. 75– 8. 50		6. 50– 7. 50
February		7. 00– 7. 25		7. 50– 8. 00		

TABLE 19.—*Prices to jobbers of eastern York Imperial apples in barrels, by months, seasons 1918 to 1924*—Con.[1]

Year and month	New York	Philadelphia	Pittsburgh	Baltimore	Cleveland	Chicago
1920–21	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*
October	4.00– 5.00	3.00– 4.50	3.50– 4.50	4.00– 4.50	4.50– 6.00	
November	4.00– 5.00	3.50– 4.50	4.00– 4.75	3.75– 4.25	4.50– 5.00	4.50– 5.25
December	4.00– 5.50	3.00– 4.50	4.00– 5.00	4.25– 4.75	4.50– 5.00	4.50– 5.00
January	4.00– 5.00	3.25– 4.00	3.50– 4.00	4.00– 4.50	4.00– 4.50	4.00– 5.00
February	4.25– 5.00	3.00– 5.00	3.50– 4.00	4.00– 4.50	3.25– 4.50	5.00– 5.25
March	5.00– 6.00	4.00– 4.50		4.50– 5.50		
1922–23						
October	3.00– 4.00	2.50– 3.25	3.00– 3.50	3.00– 3.50	3.25– 4.00	
November	3.25– 4.75	3.25– 4.00	3.15– 3.50	3.00– 3.50	3.75– 4.25	
December	3.75– 4.50	3.75– 4.25	4.00– 4.25	3.00– 4.50	4.00– 4.50	
January	4.00– 4.75	3.50– 4.25		3.25– 5.25	4.25– 4.50	
February	5.00– 6.00	4.00– 5.00	4.25– 4.75	4.25– 5.25	4.00	
March	5.00– 6.00		4.50– 5.00			
1923–24						
October	3.00– 4.00	3.00– 3.50	4.00– 4.25	3.00– 3.25	4.00– 5.50	
November	3.00– 4.25	3.00– 3.50	2.50– 3.50	3.00– 3.25	3.25– 4.00	
December	3.00– 4.50	2.75– 3.75	3.25– 3.75	3.00– 3.50	3.25– 3.50	3.25– 3.75
January	3.00– 4.00	2.75– 3.50	3.25– 3.50	3.00– 3.50	2.75– 3.75	3.00– 3.50
February	3.50– 4.25	2.75– 3.75	2.50– 4.00	3.00– 3.75	3.50– 3.75	3.00– 3.50
March	3.00– 5.00	4.00– 4.50		3.25– 4.50		
1924–25						
October		4.50– 5.00				
November	4.50– 5.50	3.75– 5.00	4.00– 4.50	4.00– 4.50	4.50– 5.50	5.25– 5.50
December	5.00– 5.75	4.50– 5.00	5.00– 5.25	4.25– 4.50	4.75– 5.25	
January	5.00– 6.50	4.50– 5.75	5.00– 5.75	4.50– 5.50	5.00– 6.50	
February	6.00– 7.25	5.75– 6.50		6.00– 6.50		
March	6.00– 7.25	5.50– 7.00	6.00	6.00– 7.00		

[1] Practically no sales of eastern York Imperials reported for 1921–22.

TABLE 20.—*Prices to jobbers of eastern Oldenburg apples in bushel baskets, by months, seasons 1919 to 1924* [1]

Year and month	New York City	Pittsburgh	Philadelphia	Baltimore	Cincinnati	Boston	St. Louis
1919:	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*
September	1.75–2.25	2.00–2.50	[2] 1.85–2.35	2.00–2.25	2.15–2.50		
1920:							
September	1.50–1.75	1.10–1.85	1.00–1.50	[2] 1.40–1.50	.85–1.40	1.00–1.75	1.75
1921:							
August	2.00–3.00	2.50–3.00	2.25–2.75	2.00–3.00	2.25–2.75	2.00–3.50	2.40–2.60
September					2.00	2.00–3.50	
1922:							
August	[2] .65–1.00	.50– .80	.50	.75–1.00	.40– .90	.50–2.00	.75–1.00
September	[2] .85–1.25	.60–1.25	.75–1.65	.50– .65	1.00–1.25	.50– .65	.75– .85
1923:							
September	.75–1.00	.75–1.35	.80	1.00–1.25	1.15–1.25	.40–1.25	
1924:							
August	1.25–2.25	.75–2.25	.75–1.75	1.25–1.75	1.10–1.50	[2] 1.15	1.50–1.60
September	.90–1.12½	.75–1.35	.75–1.35	.75–1.25	.75–1.65	.75– .90	1.25–1.50

[1] No information available for 1918.

[2] Estimated from barrel price.

TABLE 21.—*Prices to jobbers of eastern Wealthy apples in barrels, by months, seasons 1918 to 1924*

Year and month	New York	Philadelphia	Pittsburgh	Boston	Baltimore	Cincinnati	Chicago
1918–19:	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*
September	5.00– 7.50	4.75–6.50	5.50–6.00		6.00–6.25	6.50–7.00	6.50
October	6.00– 7.50	5.00–6.50	5.00–6.00			5.25–6.00	5.25–6.25
1919–20:							
September	7.00– 8.50	7.00–8.00	6.25–7.50		6.00–8.00	7.00–7.50	
1920–21:							
September	6.00– 7.00	4.00–5.50	4.50–6.00	5.00–6.00	5.00–5.50	5.00–6.00	5.00–6.00
October	4.00– 6.50	3.25–5.30	4.00–6.00	4.00–6.00	4.00–4.75	4.25–4.75	5.00–6.25
1921–22:							
September	8.00– 9.00	[1] 6.00–8.25	6.00–7.50	5.00–7.00	8.00–8.25	8.00–8.50	8.25–9.00
October	6.50–11.00	9.00	[1] 6.75–8.25	6.00–6.50			8.00–8.50
1922–23:							
September	2.25– 5.00	2.00–3.50	3.00–3.75	3.00–4.00	2.25–3.00	[1] 2.25–3.75	
October	4.00– 5.00	[1] 1.80–3.00	3.00–3.75	[1] 3.00	[1] 3.00–4.25	[1] 2.70–3.75	
1923–24:							
September	3.75– 6.00	[1] 3.00–4.50	[1] 3.45–5.25	2.50–5.00	[1] 3.75–5.25	[1] 3.00–4.05	
October	3.00– 5.50	[1] 2.25–3.30	[1] 3.00–3.75	2.00–5.00	[1] 3.00–3.75	2.75–3.00	
1924–25:							
September	4.00– 5.50	[1] 3.45–5.25	[1] 3.45–5.25	4.00–6.00	4.25–4.50	[1] 3.00–5.25	5.00–5.50
October	5.00– 6.50	4.00–4.50	4.25–4.50	[1] 4.50	[1] 3.75–4.20	5.50–5.75	4.50–5.25

[1] Estimated from price of bushel baskets.

TABLE 22.—*Prices to jobbers of midwestern Jonathan apples in barrels, by months, seasons 1919 to 1924* [1]

Year and month	Chicago	St. Louis	Kansas City	Minneapolis	St. Paul
1919–20:	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*
October	8.50– 9.75	8.25– 9.25	8.00–9.00	10.00–10.50	10.00–10.50
November	9.50–10.00	9.00–10.00	8.75–9.00	10.50	10.00–11.00
December	9.00–10.00	9.00–10.00	8.50–9.00	10.50	10.50
January	8.50– 9.00		7.00–7.50	10.00–10.50	10.50
February	8.50– 9.00	8.50		9.50–10.00	
1920–21:					
October	7.50– 9.00	6.50– 7.25	7.00–8.00	9.50–10.50	9.00– 9.50
November	8.00– 9.00		8.50–9.50	10.00–10.50	
December	6.50– 8.50		8.50–9.50		
January	6.00– 7.00				
1922–23:					
October	4.00– 6.50	3.50– 4.75	4.50–5.00	5.50– 6.50	5.00– 6.50
November	5.00– 6.25	4.50	4.25–4.75	5.00– 6.00	5.00– 6.00
December	5.00– 6.00	5.00– 6.00	4.25–5.00	5.00– 6.00	
January	5.00– 6.00	5.50– 6.00	4.50–5.00	5.00– 6.00	
February	5.00– 5.50		4.50–5.00	5.50– 6.00	
March	5.50– 6.00		5.00–6.50		
April			6.00–7.00		
1923–24:					
October	5.50– 6.00	3.00– 5.00	5.00–5.50	5.50– 6.50	5.50– 6.50
November	5.50– 6.00	5.25– 5.50	5.00–5.50	6.00– 6.50	6.00– 6.50
December	5.00– 5.50	4.25– 5.25	5.00–5.25	6.00– 6.50	6.00
January	5.00– 5.50	4.00– 5.00	5.25–6.00	6.00– 6.50	6.50
February	5.50– 6.00	4.25– 5.15	6.00	6.50	6.50
March		4.00– 4.50	5.00–6.00	6.00– 6.50	4.00
1924–25:					
October	7.00– 8.00	5.50– 6.75	6.25–6.50	7.00– 7.50	[2]
November	7.00– 8.00	7.00– 7.50	6.25–7.00	8.00– 8.50	
December	7.50– 8.50	7.50– 8.00	7.25–8.00	9.00	
January	8.00– 9.00	8.00– 9.00	7.50–9.00	9.00– 9.50	
February	8.50– 9.00	8.50–10.00	8.00–9.50	9.50–10.00	
March	[3] 10.50–11.00		8.50–9.50	10.00–12.00	

[1] Practically no sales of midwestern Jonathans reported in 1921–22.
[2] Practically no sales of midwestern Jonathans reported at St. Paul in 1924–25.
[3] 2¼ inches extra fancy.

TABLE 23.—*Prices per barrel of American apples in British markets, by varieties, seasons 1922 and 1923*

Week ended—	York Imperial	Baldwin	Winesap	Ben Davis	Gano
1922–23	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*
Oct. 14	4. 66–7. 54	5. 54–7. 09	----------	6. 65–6. 87	5. 47–7. 00
Oct. 21	4. 69–7. 59	6. 03–7. 14	----------	6. 03–6. 92	5. 50–7. 14
Oct. 28	5. 56–8. 22	5. 56–6. 22	6. 67–7. 78	5. 78–6. 00	5. 61–7. 20
Nov. 4	4. 91–6. 91	3. 68–7. 36	6. 51–7. 53	5. 36–6. 25	5. 49–7. 27
Nov. 11	4. 46–7. 14	4. 02–6. 25	6. 25–6. 69	5. 35–6. 25	6. 13–6. 36
Nov. 18	4. 26–5. 94	4. 48–6. 50	5. 73–6. 29	4. 48–5. 38	5. 69–6. 21
Nov. 25	4. 50–6. 29	4. 16–5. 84	4. 94–5. 73	4. 50–5. 28	5. 30–5. 77
Dec. 2	4. 30–7. 24	5. 66–6. 11	4. 98–6. 11	4. 19–5. 21	5. 21–5. 69
Dec. 9	4. 45–6. 39	3. 88–6. 16	5. 71–5. 94	4. 57–5. 82	5. 25–5. 71
Dec. 16	4. 87–6. 73	4. 64–6. 38	5. 69–5. 78	4. 64–5. 68	5. 13–5. 59
Dec. 23	4. 64–7. 20	4. 18–6. 35	5. 70–5. 85	4. 64–5. 34	5. 31–5. 73
Jan. 6	4. 18–6. 86	4. 10–5. 76	5. 68–5. 89	5. 35–6. 20	----------
Jan. 13	4. 68–7. 02	3. 74–5. 85	4. 90–5. 70	6. 55–7. 02	----------
Jan. 20	3. 96–6. 53	4. 20–5. 83	4. 63–5. 31	6. 76–7. 11	----------
Jan. 27	4. 70–6. 57	4. 23–5. 90	4. 50–5. 69	5. 58–6. 05	----------
Feb. 3	5. 14–6. 42	4. 17–5. 85	4. 61–5. 73	4. 90–6. 54	----------
1923–24					
Oct. 2	5. 00–8. 45	5. 57–7. 50	6. 79–7. 50	6. 02–8. 06	6. 21–7. 33
Oct. 9	6. 15–8. 42	5. 69–7. 29	6. 83–7. 40	6. 15–7. 29	6. 15–7. 29
Oct. 16	4. 54–8. 62	4. 31–7. 60	6. 75–7. 25	5. 22–7. 26	5. 50–6. 24
Oct. 23	4. 03–7. 28	4. 26–5. 83	6. 00–6. 50	3. 81–5. 27	5. 15–5. 60
Oct. 30	3. 36–5. 72	4. 04–5. 49	5. 38–6. 00	4. 04–5. 72	4. 48–5. 72
Nov. 6	3. 79–5. 36	3. 79–5. 58	3. 35–4. 46	3. 91–5. 02	3. 12–4. 90
Nov. 13	3. 73–5. 26	3. 94–4. 60	3. 29–4. 93	3. 90–5. 00	3. 24–4. 82
Nov. 20	3. 68–5. 53	3. 90–6. 61	4. 44–4. 66	3. 25–5. 31	3. 90–5. 31
Nov. 27	3. 72–5. 14	4. 69–5. 47	4. 60–6. 35	3. 93–4. 92	4. 04–4. 37
Dec. 4	5. 00–5. 76	4. 35–6. 52	4. 35–4. 89	3. 91–5. 11	4. 46–5. 70
Dec. 11	4. 12–6. 13	4. 82–6. 69	4. 38–5. 26	3. 94–5. 38	4. 38–5. 47
Dec. 18	4. 81–7. 22	4. 81–7. 00	4. 37–5. 03	3. 50–5. 47	4. 59–5. 48
Dec. 25	4. 34–5. 65	4. 34–5. 00	4. 49–5. 31	4. 45–5. 10	4. 47–5. 50
Jan. 1	5. 58–6. 43	3. 86–5. 68	4. 55–5. 63	4. 29–5. 04	4. 70–5. 73
Jan. 8	5. 36–6. 65	4. 93–5. 36	4. 72–5. 79	5. 36–6. 22	5. 25–5. 79
Jan. 15	4. 77–5. 20	4. 75–5. 40	4. 24–5. 09	5. 94–6. 36	5. 09–5. 67
Jan. 22	4. 86–6. 34	4. 65–5. 92	4. 86–5. 34	4. 76–5. 28	4. 86–5. 81
Jan 29	5. 12–6. 50	4. 48–6. 18	5. 54–6. 39	4. 05–5. 76	5. 12–5. 70
Feb. 5	3. 44–4. 95	3. 98–6. 03	5. 17–6. 46	3. 88–5. 81	4. 74–6. 46
Feb. 12	3. 23–6. 45	3. 33–6. 56	4. 95–6. 19	3. 87–6. 02	4. 73–6. 02
Feb. 19	4. 72–6. 65	4. 40–5. 90	5. 26–6. 22	4. 29–5. 79	4. 29–5. 63
Feb. 26	4. 30–6. 61	4. 30–6. 45	4. 30–6. 29	4. 41–6. 02	4. 09–5. 81
Mar. 4	5. 91–7. 73	4. 72–6. 44	3. 87–6. 34	3. 81–6. 44	4. 30–5. 48
Mar. 11	4. 49–4. 70	5. 34–7. 27	2. 89–6. 30	5. 56–7. 05	4. 92–5. 88
Mar. 18	4. 93–5. 36	5. 14–6. 43	3. 86–6. 86	5. 89–6. 86	6. 22–6. 64
Mar. 25	5. 40–5. 58	4. 94–7. 62	4. 08–6. 66	4. 08–6. 87	7. 00–7. 51
Apr. 1	5. 54–6. 02	5. 81–6. 24	4. 30–6. 88	5. 81–6. 38	6. 67–7. 53
Apr. 8	5. 63–6. 49	6. 49–7. 14	6. 28–6. 71	5. 92–6. 79	6. 70–7. 49

TABLE 24.—*Exports of apples from the United States, by countries, 1918–19 to 1923–24*

Country	Year beginning July 1—						
	1918	1919	1920	1921	1922	1923	Average, 1918 to 1923
	Barrels	*Barrels*	*Barrels*	*Barrels*	*Barrels*	*Barrels*	*Barrels*
United Kingdom	1, 016, 945	600, 578	2, 061, 622	771, 452	1, 314, 981	2, 955, 395	1, 453, 496
Germany	----------	55	1, 498	75	4, 846	201, 446	34, 653
France	2, 125	634	445	149	444	465	710
Sweden	32, 732	14, 273	13, 039	13, 936	9, 598	138, 526	37, 017
Norway	116, 791	76, 382	74, 960	47, 017	56, 107	88, 865	76, 687
Denmark	31, 455	15, 105	21, 576	16, 893	7, 330	65, 841	26, 367
Other Europe	2, 173	2, 389	4, 981	2, 852	2, 500	96, 915	18, 635
Canada	264, 665	188, 543	327, 561	133, 050	162, 978	260, 731	222, 921
Mexico	33, 442	25, 676	46, 500	29, 653	39, 022	43, 823	36, 353
Australia	----------	13	3, 755	----------	1	234	667
Cuba	26, 936	28, 151	40, 233	23, 978	36, 814	53, 012	34, 854
Brazil	11, 718	23, 557	13, 247	9, 534	14, 785	28, 413	16, 876
Argentina	6, 576	28, 336	14, 907	9, 257	33, 342	55, 699	24, 686
Other countries	30, 790	46, 906	40, 777	36, 313	73, 581	108, 942	56, 218
Total	1, 576, 348	1, 050, 598	2, 665, 101	1, 094, 159	1, 756, 329	4, 098, 307	2, 040, 140

TABLE 25.—*Exports of apples from the United States, by months, 1918–19 to 1923–24*

Month	Year beginning July 1—						
	1918	1919	1920	1921	1922	1923	Average, 1918 to 1923
	Barrels	*Barrels*	*Barrels*	*Barrels*	*Barrels*	*Barrels*	*Barrels*
July	22,654	23,450	15,764	8,906	34,054	34,488	23,219
August	22,517	21,659	24,037	19,639	57,006	85,461	38,386
September	14,942	34,619	46,675	22,504	131,233	248,834	83,135
October	90,780	115,715	217,368	129,124	254,078	948,301	292,561
November	104,572	213,270	491,786	200,052	361,375	688,800	343,309
December	160,035	142,806	503,002	189,530	286,275	320,570	267,036
January	213,107	161,157	591,926	157,336	217,806	447,494	298,138
February	493,996	89,115	381,411	152,338	220,644	487,288	304,132
March	286,979	125,710	289,405	133,315	121,140	529,240	247,632
April	137,409	73,674	73,686	59,342	59,069	248,484	108,611
May	20,747	44,113	19,248	13,816	10,177	47,738	25,973
June	8,610	5,310	10,793	8,257	3,472	11,609	8,008
Total	1,576,348	1,050,598	2,665,101	1,094,159	1,756,329	4,098,307	2,040,140

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